THE ENGINEERING AND MINING JOURNAL.

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NOTE.—Communications relative to the editorial management should be addressed to Mr. ROTHWELL. The articles written by Mr. Raymond will be signed with a star.

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AMERICAN INSTITUTE OF MINING ENGINEERS.

OFFICIAL BULLETIN.

THE February meeting of the Institute will be held in New York City, beginning Tuesday evening, February 27. The place of meeting will be subsequently announced. Members will please give early notice to the Secretary of their intention to read papers at this meeting.

LAFAYETTE COLLEGE, EASTON, Pa. THOMAS M. DROWN, Secretary.

"THE ENGINEERING AND MINING JOURNAL" ADVOCATES THE ADOPTION OF THE METRIC SYSTEM OF WEIGHTS AND MEASURES,

and urges all who are interested in the simplification of our present complicated and unsatisfactory systems to aid, by their active sympathy and encouragement, the early introduction of this much-needed reform.

THE LYKENS VALLEY MINE FIRE.

The Short Mountain and Lykens Valley Mines, which produce from 150,000 to 200,000 tons of coal a year, have been on fire since January 1st, and the Lykens Valley Coal Company, which operates the collieries, has already suffered a heavy loss. There is a difference of opinion as to how the fire originated. One theory is that a spark from a miner's lamp started it; another that the heat from one of the pumping engines in the mine was responsible. The fire spread with remarkable rapidity, ascending to the top of the Short Mountain slope, nearly 500 yards from the supposed point of origin, in six or seven hours.

Those who read the paper on "Fires in Mines and the Means of Extinguishing Them" which recently appeared in these columns, will scarcely be surprised at this new "accident" from underground engines. Our experience with mine fires makes us somewhat incredulous when we hear of the fire "being under control," or of the probability of putting it out with fire-engines. The water from two small streams is being turned into the mine, and this of course will extinguish the fire in the lower levels; but the great danger lies in the fact that the underground workings are connected, it is said, for a distance of some eight miles; and as much of the coal lies above water level, and the bed is worked to the out-crop which is fallen in in a great number of places, it will be impossible to drown out the fire, or, we fear, to extinguish it in any other way than by the tedious process which consists in closing off the district on fire and preventing with the utmost care any admission of air. The extinction may be hastened by the admission of carbonic acid or steam, or both; but the first and most pressing necessity in the case is to fence off the part on fire, and any effort to extinguish the fire which interferes with this, will probably be found to have been ill-advised.

It is said that 80 or 90 mules have perished in the mines, but no men have been lost. These collieries are very extensive, and if the efforts to confine the fire to a limited district be not promptly successful, the loss may run up into the millions of dollars. Telegraph advices yesterday (11th) state that "the firemen are still at work combating the flames, but their progress is very slow. The work of extinguishing the fire is not progressing as favorably as was hoped. What is gained one day is lost the next. Fire which is extinguished on the surface, smoulders underneath and breaks out again when least expected."

MINING STATISTICS IN COLORADO.

THE permanent prosperity of the new State of Colorado will be due in the future, as that of the Territory has been due in the past, to the fortunate combination of agricultural and mineral resources. The necessity of giving to the mining and metallurgical industries of the State that most fundamental and far-reaching assistance which comes from the spread of accurate information throughout the community, appears to be fully recognized by the citizens of Colorado, and we note with pleasure, as a proof of this wise foresight, the introduction of a bill in the Legislature to establish the office of Commissioner of Mines. The substance of the bill is as follows:

The first section recites the importance of mining to the State and the impracticability of obtaining, except through Governmental agencies, trustworthy statistics concerning the production and reduction of ores, and establishes the office of Commissioner of Mines.

The second section provides that this officer shall be appointed by the Governor and Senate, shall be known to be competent, shall be "a practical miner," shall have his office at the capital of the State, and shall hold office for four years unless removed for good cause. The term "practical miner" in this section is somewhat vague, and may give trouble hereafter. If it means that the Commissioner shall be practically acquainted with the art and business of mining, it is not enough. A more important qualification would be a practical acquaintance with milling and smelting. If it means that he shall have worked as a laborer in some mine, it is likely to exclude thoroughly qualified and suitable candidates; and on the other hand, while such a preparatory experience would doubtless be an advantage to a person qualified in other respects, it is of itself by no means a proof of competency. We suggest also that the power of removing the Commissioner for good cause should be explicitly vested in the Governor, unless this legally follows from the language used in the bill—which we doubt.

The third section provides for a seal, "expressly for the use of his office." No doubt a seal is "the correct thing," but would it not be well to define its use and weight? Is it to be merely an ornament, or is it to give the certificates and documents which bear it a *prima facie* authority as evidence in the courts of the State, etc?

The fourth section provides that the Comissioner shall collect statistical information, examine processes employed in the State, and "inquire into the merits of other processes, demonstrated by practical experience elsewhere to be the most successful" etc., etc. The intention of this provision is good enough, but the limitation introduced defeats that intention. When a new process has been "demonstrated by practical experience to be the most successful," nobody will care to have a superfluous Commissioner "inquiring" about its merits. He ought to inquire concerning methods that are *alleged* to be successful.

The fifth section gives authority to the Commissioner, or his duly authorized deputy, to visit and examine any mine for the purpose of ascertaining its condition and the means of egress from it. It seems to us that this authority might be abused. To "ascertain the condition" of a mine may mean to find out whether it is likely to pay a dividend; and since mines are private property, an inquisition of this kind should be strictly guarded against. At least, it should be made the cause for the summary removal of the Commissioner, or any of his deputies, if information so obtained should be used in speculation or communicated to others without the consent of the proprietors. We are inclined to think also that the Commissioner should be prohibited from reporting on mines for sellers or buyers and for private fees. Certainly the seal aforesaid should not be affixed to such reports, and if they are permitted at all, they should be signed by the Commissioner as a private person, and bear the weight only of his individual reputation, not his official position.

The sixth section makes it the duty of the Commissioner to notify owners, lessors or lessees of mines when he finds the same to be dangerous by reason of insufficient egress, defective timbering, etc. It is not made the duty of the parties, so far as we can see, to correct the evils complained of; no penalties are affixed to their neglect: and the notice of the Commissioner appears to be a mere *brutum fulmen*, without force, except that probably, if the operator of a dangerous mine should be sued for damages resulting from such causes, the fact that he had been thus notified beforehand would go to establish culpable neglect on his part. But there is another objection to this section. It lays down no rules by which the dangerous condition of a mine may be determined, makes no distinction between coal and metal mines. All this is left to the discretion of the Commissioner. In many cases, moreover, a mine must necessarily, for a certain period at least, be in a dangerous condition. While a tunnel or a shaft is in progress, for instance, there is but one means of egress; and all that the State can properly do is to restrict the number of men employed under such conditions. It seems to us that the law should provide for proceedings in the courts when there is a difference of opinion between the inspecting officer and the mining operator. In such a case let the Commissioner bring a suit, or submit the matter to arbitration in some way, and let the operator be forced to make such repairs or take such precautions as may be judged advisable. With regard to collieries (of which there are already a considerable number in the State), the question of ventilation is more important than that of egress or timbering; and this should be included among the duties of the inspecting officer.

The seventh section requires correspondence to be conducted by the Commissioner, and letters, reports and papers to be kept on file in his office. This is very well, unless it means that the files shall be open to public inspection, in which case it is not calculated to secure the best results. It ought to be possible for such an officer to receive and use discreetly confidential communications. Moreover, a large amount of valuable information can be obtained if the parties furnishing it are assured that it will not be published until after a certain time, when its scientific value will not be impaired, although its effect upon private business will no longer be unfavorably felt. Again, if the Commissioner is a professional mining engineer or metallurgist, he can undoubtedly obtain,

privately, advice and information from colleagues in his profession, which they would not give openly to the public.

The eighth section provides for the formation by the Commissioner of a geological and mineralogical collection of specimens found in the State, and directs him to determine by analysis or assay the character and value of the same. He ought to be permitted to collect also specimens from other localities, since these are equally useful for study, and indispensable for comparison; and the direction that he shall analyze or assay the specimens should not be so general in character, since the vast majority of such specimens would require no such tests; and the assay of any specimen not sampled or properly selected for the purpose is rarely worth what it costs. Only curious or rare or perplexing specimens should be so examined.

The ninth section requires the Commissioner to assay ores when requested, and to keep a record of such assays. The fee of two dollars for each assay is to be collected and paid into the State treasury. As to the policy of laying this duty upon the Commissioner, we shall say something further on. The amount of the fee, we think, is not large enough to cover all kinds of assays—crucible, volumetric and analytic. Moreover, if several elements are to be determined, the fee should be larger in proportion. The bill evidently contemplates crucible assays for gold or silver, perhaps also the Gay-Lussac determination of silver; but its language would cover lead, iron, quicksilver, zinc, copper, sulphur, perhaps even carbon assays.

The tenth section requires an annual visit by the Commissioner or his deputy to each mining county in the State, and the inspection of "as many of the mines in the different counties as possible"—to which, of course, there is no objection.

The eleventh section requires him to report to the Legislature at each session, and to the Governor on or before the first Monday in December in each year, when the Legislature is not in session. We do not criticise this provision, because we do not know all the circumstances which may have dictated it. As a general proposition, however, we should say that one annual report, whether to the Governor or to the Legislature, is quite as much as should be required, and that the 1st of December is an unfortunate time for it. It would be much better to have each report contain the statistics of a calendar year, and require its presentation early in the spring.

The twelfth section provides for two assistants or deputies, appointed and removable for good cause by the Commissioner, and this and the following section fix the salaries and make appropriations as follows; For the Commissioner's annual salary and clerk-hire, five thousand dollars; the two assistants fifteen hundred each; fitting up laboratory, fifteen hundred; office-rent, fuel and lights, five hundred; office-furniture, etc., five hundred. These provisions seem liberal enough.

The fourteenth and concluding section repeals previous laws relative to Territorial Assayers and Assay Offices. Unless this measure is necessary for some reason not evident to us, we greatly doubt its wisdom. It is a question, perhaps, whether the State ought to go into the business of assaying at all. By so doing, it destroys to a considerable extent the occupation of private assayers, and tends to exclude from its borders a class of men more likely than any other class to make useful discoveries. Many a skilled metallurgist establishes himself as an assayer in some active mining camp, and supports himself in that way until he can engage in profitable enterprise or become the director of metallurgical works. It is undoubtedly an evil to discourage such men by running a two-dollar opposition to their business. But this may be counterbalanced by the great benefit derived from the stimulus which prospecting receives through facilities for cheap, quick and trustworthy assays. To secure this benefit, however, the assay offices ought to be in the several counties, where they can be accessible to the miners. To set up a laboratory in Denver, receive specimens for assay by mail or express, and make assays for two dollars each, seems to us likely to decrease, rather than increase, the facilities afforded to practical miners and prospectors. Perhaps private assayers in the mining camps will again start up and do good business, because they are on the spot. In that case, why should the Commissioner make assays at all? Again, the law does not provide for an assayer. It seems to require that the Commissioner and his deputies shall be constantly travelling and inspecting, inquiring and corresponding; and yet the Commissioner must make assays when requested. Without presuming to judge positively on this point, we cannot help feeling that the whole business of assaying should either be left to the public, or that the system of State assayers in the different counties should be retained.

We have thus analyzed and criticised at length the measure before us, not because we have any desire to find fault, but because, being heartily in favor of the plan, we wish to see its success assured in advance. All our objections and suggestions taken together do not amount to opposition. We would rather have the bill pass as it stands than imperil its passage by any attempted amendments; but if the suggestions we have made should prove, upon examination by those more familiar with the local conditions, to be well founded, we should welcome their adoption into the law.

The work of the United States Commissioner of Mining Statistics is suspended. Whether it will ever be renewed, is a matter for Congress to decide. Mr. RAYMOND certainly does not expect to continue in that sphere after the publication of the report rendered in the spring of 1877, which is still in press. For the year 1876 there was no appropriation, and there will be no United States report. It is all the more important, therefore, that each State shall take the matter in hand for itself; and if they imitate the proposed action of Colorado, which appropriates nearly or quite as much money for the year's work as has usually been appropriated by Congress for the whole Pacific slope, it is easy to foresee that much more complete and satisfactory results may be secured than were possible to the United States Commissioner. ✲

FOREIGN VIEWS OF THE AMERICAN IRON INDUSTRY.

THE Exhibition at Philadelphia, though it has vanished measurably from "the place that knew it," is making a secondary and most successful appearance in foreign literature. Several publications now on our table bear witness to the interest and industry with which the display of American resources and arts was studied by foreign observers. This is notably the case in Germany.

The letters of Professor REULEAUX, which attracted so much attention and aroused so much fierce controversy in the German Press, have been collected and published in pamphlet form. His criticism of the German exhibits at Philadelphia was perhaps too severe; but that it was wholesome, its results are daily demonstrating.

Mr. MOSLER, editor of the Prussian *Zeitschrift*, and one of the delegates to the Centennial Exhibition, publishes with surprising promptness in the twenty-fourth volume of his journal his report on the Mining and Metallurgical Industry of the United States—which is issued also as a separate pamphlet. It is an admirable *résumé*, equal in comprehensiveness and accuracy to any single publication on the subject which we can recall. The introductory chapter contains a discussion of the topography of this country, in its bearings upon "the districts of commerce and industry," and a general survey of the geological formations. This is followed by an account, largely statistical, of the leading mining and metallurgical industries, including coal, petroleum, iron and steel, lead, copper, etc. Gold and silver are but lightly mentioned in passing, other delegates having specially studied these departments. Mr. MOSLER'S point of view is commercial and economical, not technical. Moreover, it is as a picture of American industry for German eyes that his treatise is to be considered; and in this respect we have to congratulate him upon the excellent use he has made of his materials and opportunities for personal observation. That portion of his review which may prove specially interesting to American readers is the general conclusions as to our iron and steel industry, from which we translate and condense the following extract:

"It is evident," says Mr. MOSLER, in substance, "that the North American iron industry can at present maintain itself against European, particularly English, competition only by high duties. Thanks to the long-established protective policy, it is impossible for the United States to produce iron more cheaply than Europe, or to work towards exportation, except of certain manufactured articles, made by the use of numerous admirable contrivances.

"On the other hand, the protective system has undoubtedly been an essential means of great 'numerical extension' of American ironworks. This system, together with freedom from hampering traditions or laws, the ability to copy and improve the examples of the Old World, and the restless activity, industry and skill of the North Americans, have operated towards this result.

"Nevertheless, in my opinion the tariff policy has rather accelerated than prevented the present unfortunate condition of the industry. With the exception of works belonging to large manufacturing establishments, and of the eleven Bessemer works, this depression is greater in the United States than in Germany. Even the position of the Bessemer works is not beyond grave apprehensions for the future. The independence which the United States have achieved under a protective policy in the manufacture of iron has been, in my judgment, too dearly bought by great national sacrifices, and is, after all, merely apparent. This will be clearly seen, whenever the rich natural resources, which are now, in American fashion, utilized for present gain without rational regard for the future, begin to be exhausted. There might indeed be doubt of the successful recovery of prosperity after such waste, if the great sources of the Southern States in iron and coal should not equal the sanguine expectations formed concerning them."

It is not perhaps logical, but it is natural, to reply to Mr. MOSLER'S prophecy, that the day of exhaustion is yet far off. Indeed, we are justified in believing that the approach of that day, long before it really dawns, will bring about all the improvements in economy which are now lacking. Mere preaching never did and never will prevent the waste of superabundant natural treasures. Hard times, and that only, will supply the necessary stimulus toward improved economy.

Simultaneously with Mr. MOSLER'S essay appears the first installment (also in the Prussian *Zeitschrift*) of Dr. HERMANN WEDDING'S report on The Iron Works of the United States. This is devoted to a survey of the iron ore deposits of the country. We wait with interest the, for us, more important descriptions and criticisms of American technical practice which will follow. We notice that in his introduction, Dr. WEDDING says the present condition of the American is exactly like that of the German iron trade, and declares that this is "a proof how little the tariff has to do with it." ✲

THE COPPER MINERAL YIELD OF THE LAKE SUPERIOR DISTRICT FOR 1876.—The Houghton *Mining Gazette* of the 4th inst. says:—We have been unable to get the exact figures from all the mines, in time for this issue. Below will be found the important products, official and approximate, which will permit a pretty close calculation being made covering the total yield in copper mineral, of the mines of Lake Superior for the year ending December 31. 1876:

	Tons.		Tons
Calumet and Hecla	13,549	Phœnix	840
Quincy	1,831	Allouez (about)	860
Franklin	1,200	Cliff (about)	500
Pewabic	367	All other sources including Ontonagon, and Isle Royale (about)	800
Osceola	1,203		
Atlantic (about)	1,300		
Central (about)	1,300	Total (about)	23,690

ANNUAL REVIEW OF THE METAL MARKET FOR 1876.

IT will be seen by the following tables that the values of metals, like those of nearly all other articles, have steadily declined during the year:

NEW YORK PRICES OF METALS FOR 1876.

DATE.	Copper per lb. Currency.	Tin per lb.—Gold.				Price of Gold.
		Straits.	L. & F.	Refined.	Banca.	
	Cents.	Cents.	Cents.	Cents.	Cents.	
January 1	23¼	18 @19½	18½@19	19 @19½	23 @24	$1·12¾
January 28	23 @23¼	18¾@19	18¼@18¾	18¾	23	1·13
February 25	22¾@23¾	18	17½	.....	22¾	1·14
March 24	22½@22	17	16⅞	17¼	21¾	1·14¼
April 28	22 @22¼	17 @17¼	16⅞@17	17¼	22 @22½	1·12¾
May 26	21	18¼	18½	18	22	1·12⅝
June 23	19½	17½@17¾	17¼@17½	17½	21½	1·12
July 28	19¾@20	17 @17¼	17 @17¼	.....	21	1·11⅞
August 25	18⅞@18¾	17	17	.....	20	1·11
September 29	20⅛@21	17¼	16⅝	16¾	19½	1·10⅛
October 27	20¾@21	17¼@17⅜	16¾	17	19½	1·09¾
November 24	20¼	18	17¾	18	20	1·09⅞
December 29	19⅜@19½	17½	17¼	17½	19¼@19½	1·07

TIN PLATES per Box—Gold.

DATE.	CHARCOAL.		COKE.	
	Tins.	Ternes.	Tins.	Ternes.
January 1	$7·50 @$7·75	$7·00 @$7·25	$6.62½@$6.87½	$5.25 @$6.50
January 28	7.62½	7.12½	6.87½	6.25 @ 6.37½
February 25	7.37½@ 7.75	7.37½@ 7.50	6.62½@ 6.75	6.37½@ 6.50
March 24	7.50 @ 7.62½	6.75 @ 7.25	6.37½@ 6.50	6.12½@ 6.25
April 28	7.25	6.75 @ 7.00	6.25 @ 6.37½	6.00 @ 6.12½
May 26	7.00 @ 7.25	6.50 @ 7.00	6.00 @ 6.25	5.62½@ 6.00
June 23	6.75 @ 7.25	6.37½@ 6.62½	6.00	5.50 @ 5.75
July 28	7.25 @ 7.50	6.75	6.25	6.00
August 25	7.25 @ 7.37½	6.75 @ 7.00	6.75 @ 7.00	5.75 @ 6.00
September 29	7.12½@ 7.25	6.50 @ 6.62½	6.25	5.87½@ 6.00
October 27	6.75 @ 7.00	6.25 @ 6.50	6.00 @ 6.12½	5.50 @ 5.75
November 24	6.75 @ 7.00	6.00 @ 6.50	6.00	5.50 @ 5.75
December 29	6.75 @ 7.00	6.12½@ 6.25	6.00	5.50 @ 5.62½

DATE.	Ordinary Domestic Lead per lb., currency.	Domestic Spelter per lb., currency.	Antimony per lb., gold.	Quicksilver per lb., gold.	Fine Silver Bars, per ounce, gold.
January 1	$ 6·6	$ 7·40	14½@14¾	75	$1.23 @$1.23⅛
January 28	6·85	7·60	14	65	1.20 @ 1.21
February 25	7·2	7¾	14½@14¾	67	1.17
March 24	6·35	7¾	16 @16½	64	1.14 @ 1.14½
April 28	7·12½	8	15⅞	61@62	1.16½
May 26	7·2	7¾	15½	60	1.13
June 23	7·05	8	15½	53@54	1.10¼
July 28	7	7¼	15¼@15½	50@52	1.10½
August 25	6·9	7¼@7½	15¼@15½	50	1.13
September 29	6·5	7	14¾	46@48	1.14
October 27	6·1	6⅝	14¾@15	50	1.16¼@ 1.1½
November 24	6·05@6·075	6½@5¾	13½@14	62½	1.17½
December 29	6·15	6⅜@6½	13¼@13½	55	11.22 @ 1.22½

BULLION.—The prices of silver have fluctuated more than those of any other article on this list, ranging from $1 to $1.26 per oz. for fine. The large production of the bonanza mines, Germany demonetizing silver and forcing it upon the European markets, and the unfavorable condition of exchange on India greatly disturbed the price of this article, and attracted the attention of the Press, of statesmen and of political economists. These discussions tended to a still further depreciation of its value, and the price declined almost uninterruptedly until early in July, when the lowest point was reached—a decline of 13c. per oz. having occurred in about one month's time. This unprecedented large and rapid decline was the result of the German Government forcing some of its silver on the London market early in June, followed by the offers of the India loan, and an attempt to force several California lots upon the same market. July 12 the report of the Conference Committee on the Silver bill, which authorized the purchase of $20,000,000 of bullion, was adopted by the House, by a vote of 128 in the affirmative, and 76 in the negative. This had an immediate beneficial influence, which was augmented by rumors that Germany had but little, if any, more silver to sell. After this came anticipations of a European war, which gave additional strength to prices, especially as they were followed by the recommendation of the Secretary of the Treasury to issue $80,000,000 of subsidiary silver coin. The depression in exchange on India, which occurred in London during the early portion of the year, was the result of the stoppage of railroad construction and other improvements in that country, and a corresponding decrease in the demand on England for money.

Towards the end of the year exchange was greatly improved by the demand for silver to provide for the large purchases of silk in China, and this, taken in connection with the supposed necessities of our Government for subsidiary coinage, increased the price to the highest point of the year. Our bonanza firms, believing they controlled the situation, and that the Director of the Mint would be obliged to pay them any price they might demand, held their silver at exorbitant rates, but the Mint purchased a large amount in Europe, and this policy absorbing the surplus there, tended to a temporary increase of the price. The lowest rate reached in London was 46¾d. per oz. in July, and the highest 58½d. on December 14, while San Francisco, at corresponding dates, quoted 18 and 8 per cent. discount.

Fine gold bars ranged from par ($20.67 gold per oz.) to ¼ per cent. premium, but mostly above par.

COPPER.—The business in this article has been quite unsatisfactory to most producers. The year opened with a stock variously estimated at from 11,000,000 to 15,000,000 lb. To this excessive accumulation was added a production greater than in 1875, with consumption not larger, but probably less than in that year. Consumers, as a rule, would not anticipate their wants, but continued to purchase throughout the year in small lots sufficient to meet only their current necessities. The market usually bore a very quiet appearance, occasionally enlivened by a large sale, at a low price, for export. During the year there were exported, in round numbers, 16,000,000 lb. of ingot copper, leaving an available stock at the end of the year (after deducting copper sold for export, and which will be delivered before the spring receipts from the mines) of about 5,000,000 lb. Were business in its normal condition, this would be considered a very favorable statistical position, the spirit of speculation would set in, and prices show considerable advance; but as it is, the market closed quiet. A few years ago, when navigation closed, copper ceased to be sent from the Lake region, and it was an easy matter to calculate what amount would be upon the market previous to the resumption of shipments at the opening of navigation the year following; but now, the production in other quarters has become quite important, and as in addition to this, quantities are carried overland from the Lake mines, this calculation is impossible. This fact had a very demoralizing effect upon prices during the early portion of the year, for those who sent copper to market by the overland route were usually those whose financial necessities were pressing, and there was thus introduced with the copper another disturbing and weakening element. In addition to the 16,000,000 lb. of ingot copper sent to Europe, there were exported, in the form of cartridges, clocks, lamp fixtures, etc., fully 4,000,000 lb. additional, making a total foreign demand for our copper of 20,000,000 lb., or about one-half our total production. This now constitutes a very important item in our list of exports, and it will probably be further enlarged.

The business of the year opened with the usual quiet fortnight after the holidays, followed by but moderate transactions until early in February, when 8,000,000 lb. were sold for future delivery to the French and German Governments. Succeeding this came a quiet business, followed by reported sales about April 1 of 4,000,000 lb. future deliveries, for export, and 3,000,000 lb. to consumers—the latter at 21@21½c. During the succeeding four weeks a very fair business was done, after which, until early in July, the sales were very light. Then came a sale of 5,000,000 lb. for export, followed by a fair business up to the latter part of August, when 3,500,000 lb. of copper were sold by a strong company at 19c., leaving the weaker companies without a market for their article. Contrary to the usual order of things after large purchases have been made, this resulted in a decline in prices, which did not recover until the middle of September, when 4,000,000 lb. were sold for export at, it was said, 18@18½c. Business was then quiet until early in October, when, in addition to the "spot" sales, 1,250,000 lb. for future delivery were sold at 21c. Only a very moderate business was done after this until the end of November, and, indeed, the market was very quiet up to the end of the year.

The low premium on gold, and the unfavorable exchange during the latter part of the year, prevented the possibility of an exhaustion of our scant supply by export sales, which might otherwise have been used as a means to advance prices.

LEAD.—The year opened with a stock of about 1,500 tons in the market, and closed with about 800 tons. Any figures of consumption and production that we might use at this time would be merely wild guesses, so we omit them, and shall wait until we are able to procure official returns. Foreign lead has discontinued to be an article of commerce in this country, excepting almost wholly with consumers who manufacture articles for export and receive a drawback on their goods when shipped. Domestic lead has been quiet, but has shown more speculation than the other metals, and has, at times, been under better control.

The business done previous to the latter part of May, when sales of 1,700 tons were reported in one week, was in a small way, but with improving prices on the currency basis. A quiet business followed until the latter part of August, when 400 tons of Selby lead were reported as sold, succeeded the next week by sales of mixed brands, aggregating 1,100 tons. The latter part of August there were sales of 500 tons of ordinary lead reported, and the middle of September 900 tons. Trade was again quiet until early in November, when 500 tons of Selby lead were reported as sold at 6c. currency. A very quiet business followed until December, during which month considerable sales were made, with the market closing at the end of year at 6·15c. currency.

As soon as we procure the statistics of production and consumption of lead during 1876, we shall give it much more extended notice, and are therefore brief at present.

TIN.—Messrs. WHITE & HASKELL reported 350 tons of tin in first hands at the opening of the year; imports during the year, 4,297 tons, and balance on hand at its close, 175 tons, making the consumption during 1876 4,472 tons, as against 4,273 in 1875. Although the consumption for two years differs by only 200 tons, yet, on account of an entire lack of speculations, and consumers following a hand-to-mouth policy, the business of the year under review bore a much more quiet appearance than the preceding one. Prices both here and in London showed a decline at the end of the year as compared with the opening, although closing considerably higher than the lowest points reached. The consumption of tin throughout the world has been constantly increasing under the declining prices of several years past, but this has been more than equalized by an increased production. Straits tin absorbs the bulk of the business in this market. It closed at but ¼c. per lb. under the opening price of the year, while L. & F. showed a decline of ¾c.; Refined, 1½c.; and Banca, 3½c.@3¾c. for large lots.

Business from the opening of the year until early in March was confined to jobbing lots, with prices steadily declining, sales aggregating some 3,000

to 4,000 slabs were made, without, however, checking for any length of time the downward tendency of rates. In April, quotations were 16¾c.@17c., gold, for Straits, at which a better business was done, and prices gradually improved to 18¼c. in the latter part of May, after which a decline followed, with but slight fluctuations, gradually reaching 16¾c. in the middle of August, and did not reach a higher quotation than 17c. before the first of November, at which time prices sympathized with an advance in London (a recovery of from £8 to £9 from the lowest point—£70—attained), and 18c. was quoted at the end of that month. During December business was very quiet, with prices drooping.

TIN PLATES.—These have had a very quiet year, with business almost entirely in a jobbing way. Closing prices show declines of 62½c.@$1.25 per box, as compared with the opening quotations.

SPELTER.—Foreign spelter has occupied a very unimportant place in the business of the year. A reduction in the cost of the domestic product, with an improvement in quality, and a more general recognition of its merits has permitted this to secure almost the whole of the trade. A Combination to control the price of this article existed during the first half of the year, but, like the Anthracite Coal Combination, whose history in connection with that of previous combinations we reviewed at considerable length in our Annual Coal Trade Review, it had to contend with the usual amount of bad faith, and soon went the way of all combinations having for their object the regulation of trade by unnatural means.

The year opened with the quotation of 7·4c. currency per lb., which, under a quiet business, was advanced to 8c. early in June, but as considerable underselling was practised, a dissolution of the Combination controlling prices followed at an early day, when a decline set in, which continued until the end of the year, at which time the quotation was weak at 6¾@6¼ per lb., or the lowest of the year.

ANTIMONY.—The course of prices under a quiet business was advancing from the opening of the year until the latter part of March, when considerable business was done, and the quotation of 16@16¼c. gold, per lb., was reached. This was followed by an almost uninterrupted decline in prices, which reached, at the end of the year, their lowest point—13¼@13½c. gold, per lb.

QUICKSILVER.—The high prices that ruled for this article in 1874 and 1875 gave great impetus to the development of new mines, and resulted in a large increase in production, and an opening price in 1875 in this market of 75c. gold per lb., as against $1.65 per lb. at the opening of 1874. The constantly increasing supplies from the Spanish as well as our own mines more than counterbalanced the increased consumption brought about by the low prices. The market continued to decline until the middle of February, when it was checked for several weeks by restricted supplies from the Pacific Coast mines, caused by the bad condition of the roads. Early in April, when supplies again began to increase, the downward tendency in prices was resumed, and at the end of September 46@48c. per lb. was quoted here, with corresponding prices in London and San Francisco, although 2,000 flasks were reported sold in San Francisco during the latter part of July at 40c. per lb. These low prices greatly diminished production, and prices reacted, reaching 62½c. in New York by the latter part of November. As some of the companies accumulated ores, while low prices ruled, they were enabled to furnish large supplies as soon as an advance set in. This, combined with a quiet demand, resulted in a steady decline during December, the price reached at the close of the year being 55c. gold per lb.

FINANCIAL REVIEW OF 1876.

COAL STOCKS.

A brief retrospect of the principal events in the financial history of the chief coal corporations during the past year will serve to connect cause and effect, and show the bearing of policies that have governed many of our companies. At the opening of the year the market was strong, the quotations, with but few exceptions, standing above par, and the coal stocks were generally considered as among choice investment securities, the majority of them paying regularly annual dividends of 10 per cent., and the poorest rarely less than 8 per cent. In a few brief months they have fallen from their high position till now the question is not dividends, but receivers—and the apparent prosperity which the Coal Combination gave was found to resemble the strength which the administration of stimulants gives. It is only an *apparent* not a *real* strength, and when the stimulant is stopped, as it must be sooner or later, the patient is worse and recovery further off than before. The accompanying diagram shows in an impressive manner the course of the market and the rapidity with which some of the stocks went down.

JANUARY.—The Pennsylvania and the Delaware, Lackawanna & Western Railroad Companies reduced the wages of their laborers to 90c. per day.

The Philadelphia & Reading Railroad Company issued a loan for £2,000,000 on the London market. The annual report of this company was unfavorable and caused a sudden decline of 5 per cent. in the stock.

The Lehigh Valley Railroad Company made its report, which showed a total bond and stock indebtedness at the beginning of 1876 of about $50,000,000. The business for the year after meeting all expenses, interests on bonds, and 10 per cent. dividend on stock, showed a loss of $93,953.56.

The Delaware & Hudson Canal Company paid a 5 per cent. half-yearly dividend.

The Maryland Coal Company paid its stockholders $1.50 per share from its earnings of the previous year.

FEBRUARY.—The stock of the Pennsylvania Railroad Company was very active in anticipation of increased earnings from the Centennial traffic. This company paid a quarterly dividend of 2 per cent. on its capital stock.

The Lehigh Coal & Navigation Company paid a dividend of $1 per share.

The annual report of the American Coal Company was favorable as showing net earnings from the business of the previous year of $89,000, from which a 4 per cent. dividend was declared.

The Huntingdon & Broad Top Railroad in its annual report shows an increase of $65,000 in net earnings compared with the business of the previous year.

MARCH.—The stock of the Consolidation Coal Company rapidly declined during the month, and this in face of a dividend of 2½ per cent.

The report of the Pennsylvania Railroad Company giving the business of the previous year showed the gross earnings to amount to $23,632,760, expenses $15,479,679, leaving net earnings of $8,153,081. This company began the year with a cash balance of nearly $5.000,000 and entirely free from floating debt.

The Delaware, Lackawanna & Western Railroad Company began the changing of all its lines to narrow (4 feet 8½ inches) gauge, the total cost of which in the end probably amounted to $3,000,000.

The Delaware, Lackawanna and Western Railroad Company paid a 2½ per cent. dividend.

The Lehigh Valley Railroad Company declared a dividend of 2½ per cent.

The shares of the Reading Railroad Company were very active but tending lower.

On the publication of the annual report of the New Jersey Central Railroad Company the decrease in the earnings from coal traffic were shown to be $918,000; this brought the stock down from 108 per cent. to below par, notwithstanding a 2½ per cent. dividend was declared. The final withdrawal of the coal trade of the Delaware, Lackawanna and Western Railroad Company and the business of the Lehigh Valley Railroad at this time, created a considerable loss of revenue to the New Jersey Central Company, and from this dated the almost uninterrupted decline in its shares with which all are familiar.

APRIL.—All of the stocks during this month were very active and moved downward.

MAY.—It was generally believed, as an explanation of an unusual activity in the stock of the Consolidation Coal Company during this month, that the Baltimore & Ohio Railroad Company was desirous of acquiring a lease of this property, and was seeking to obtain control by extensive purchases of stock.

The annual report of the Morris & Essex Railroad Company showed a deficit of nearly $1,000,000 after meeting its interest charges, dividends and rentals, which deficiency had to be made good by the Delaware, Lackawanna & Western Railroad Company as lessees.

The Delaware & Hudson Canal Company held its annual meeting. The profit and loss account for the year showed a balance of about $2,250,000. The President recommended to reduce the annual rate of dividends from 10 per cent. to 8 per cent. The lease of the Albany & Susquehanna Railroad Company was amended, and fixed the capital stock of the company at 3,500,000, on which the Delaware & Hudson Canal Company guarantee annual dividends of 7 per cent. The Lehigh Coal & Navigation Company declared a dividend of $1 per share. The steadiness of the shares of the Reading Railroad, contrary to the general depression of the market, began to be a noticeable feature at this time, the quotations being held within a fraction of 88 per cent. This company reduced its working force, in the shops and along the line of road, one half.

JUNE was marked by a gradual decline of shares in comparatively quiet markets. The combined companies agreed to diminish production for sixty days.

JULY.—The Reading Railroad Company passed its July dividend on the common stock. At the end of the month the market became very excited and irregular, and a large decline occurred under extensive transactions.

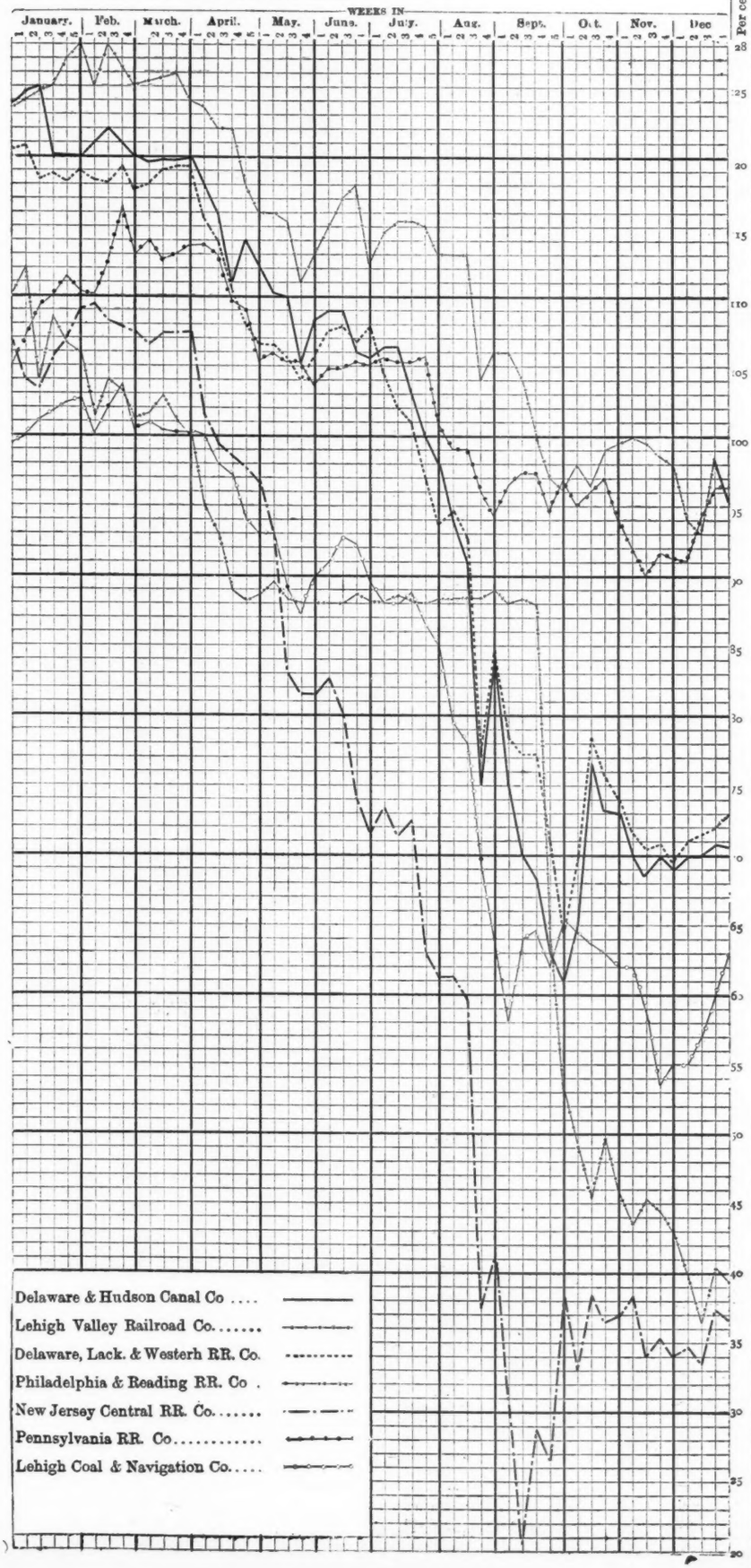
AUGUST.—The New Jersey Central Railroad Company reduced its expenses in every department. Mr. KNIGHT succeeded Mr. JOHN TAYLOR JOHNSTON as President. The Delaware and Hudson Canal Company invited subscriptions to $1,000,000 of the 7 per cent. bonds of the Albany and Susquehanna Railroad Company, about $10,000,000 of which the Delaware and Hudson Canal Company guarantees, principal and interest.

The Pennsylvania Railroad Company declared a quarterly dividend of two per cent. This Company reduced the wages of the workmen on part of its line. The Delaware, Lackawanna & Western Railroad Company ordered a reduction of wages at its mines and works. A critical period in the history of the coal shares occurred during this month, on the announcement of the dissolution of the Coal Combination. The excitement ran very high, amounting almost to a panic and prices of stock declined from 10 to 26 per cent. The stock of the Reading Company rode safe through this storm, and large sales were made at the rate fixed, viz.: 88 per cent.

SEPTEMBER.—The market at the opening of the month was very active, and prices somewhat steadier. The low prices received for coal, however, exerted

FLUCTUATIONS OF COAL STOCKS DURING THE YEAR 1876.

THE following diagram exhibits the weekly range in the quotations of the stocks of the principal coal carrying companies during the past year, beginning with January 1 and ending with December 30. The quotations are based on $100 par value.



THE following table exhibits the amount of capital stock and the market value, Jan. 1 and Dec. 30, with the shrinkage on the same within that period; also the number of shares issued, and the total number of shares sold, of the principal coal carrying companies during the year 1876:

Companies.	Amount of Cap. Stock.	Market Value of Stock, Jan. 1, 1876.	Market Value of Stock, Dec. 30, 1876.	Shrinkage during the year.	Percentage of decline about.	No. of Shares of Stock issu'd.	Shares sold during the year.
Pennsylvania RR. Co.	$68,870,200	$72,313,710	$66,631,919	5,681,791	.08	1,377,374	2,600,858
Phila. & Reading RR. Co.	31,277,575	38 048,108	13,625,336	24,422,772	.64	685,551	1,255,283
Del. Lacka. & Western "	25,889,000	31,196,245	18,963,925	12,232,320	.39	519,780	3,436 803
Lehigh Valley R. Co.	27,042,900	33,297,981	25,825,969	7,473,012	.22	540,858	03,944
Delaware & Hudson Canal Co	20,000,000	22,470,000	14,100,006	8,379,000	.37	200,000	175,836
New Jersey Central RR. Co.	20,000,000	21,300,000	7,400,000	13,900,000	.65	200,000	1,512,388
Lehigh Coal & Navigation Co.	10,218,550	10,146,064	6,482,208	3,663,856	.36	204,971	477,265
Totals	$206,328,225	$228,772,108	$153,029,357	$75,742,751	.33	3,728,514	9,572,377

a decidedly unfavorable influence on the market. The list gradually declined through the month, notably in the case of the New Jersey Central Railroad, which touched 20¾. The Lehigh Coal and Navigation Company shares, in sympathy with the New Jersey Central, also exhibited a marked decline under large sales.

The Delaware and Hudson Canal Company from the 1st of January was estimated up to this time to fall $1,000,000 short in earning running expenses. This company completed its new road on the Champlain Division from Chazy to Rouse's Point.

The support which had been given since the 20th of May to the Reading Railroad stock was withdrawn near the end of September, when it immediately broke to 64 per cent., a decline of 24 per cent. within the week.

The Lehigh Valley Railroad Company generally reduced the wages of its employees. This company acquired, through a foreclosure purchase, the Ithaca and Athens, and the Geneva and Ithaca Railroad.

OCTOBER.—The speculative element in the dealings of the coal shares largely predominated throughout this month, notably on the bear side The stock of the New Jersey Central Railroad Company was advanced by the change in its administration. It was thought by many, however, that the company would scarcely pass through its difficulties. The Reading Railroad Company promptly met its October interest obligations, paying out in the aggregate over $1,000,000 on this account alone.

NOVEMBER.—The Marylend Coal Company advertised for proposals for the purchase of $10,000 of its sinking fund bonds for cancellation : the stock of this company has been sparingly dealt in during the year, and is generally held as an investment by those who have faith in the future, when the Cumberland coal field will have fair play from the Consolidation Coal Company. The market was quiet and tended lower during the month, the continued low prices received for coal precluding the possibility of paying dividends in the near future. The Lehigh Coal & Navigation Company passed its usual dividend. The Delaware & Hudson Canal Company discharged three-fourths of its machinists and consolidated its shops into one. The Delaware, Lackawanna & Western Railroad decided not to declare the usual dividend, though the statement of the November business which was submitted, alleged that the company had earned expenses, interest charges, and about one-half of 1 per cent. on the capital stock ; also that the October and September earnings equaled together 1 per cent. on the stock, which would give a total for the three months of about 1½ per cent. earned on the capital stock. Mr. SAMUEL SLOAN was appointed President of the Rome, Watertown & Ogdensburg RR., it being supposed that this movement would increase the market for Scranton coal, this road having a connection with that of the Delaware, Lackawanna & Western Railroad at Oswego, N. Y. At the close of the year all of the quotations ranged higher. This is accounted for by rumors of the patching up of a Coal Combination, which obtained considerable credence with the public. It does not seem probable that this will be effected.

BONDS.

The fluctuations in the bonds of the coal corporations have not been so great as in the stocks; a considerable decline, however, has generally occurred, and in some instances we note differences of nearly 50 per cent. in the extreme quotations of the year. The aggregate transactions in these amount to nearly $11,000,000, the dealings being about equally distributed between the markets here and at Philadelphia.

The opening, closing, highest and lowest prices of thesefor the year is exhibited in the following table:

BONDS.	Opening Prices, January 1, 1876.	Closing Prices, Dec. 30, 1876.	Date and high'st prices for the year.		Date and lowest prices for the year.	
D. L. & W. 7s, Conv. 1892	124	106½	Jan.	1 124	Sept.	30 100
D. L. & W. 2d Mtg., 1881	114½	108¾	Jan.	29 118	April	29 105
Central of New Jersey, 1st Mtg., New	115½	109	Jan.	22 116¾	Sept.	23 106
" " " 1st Consolidated	111	89	Mar.	11 112⅛	Dec.	9 79½
" " " Convertible	106½	83	Feb.	12 111¾	Dec.	9 79
L. & W. B. Coal Co., Consolidated	96	63	Feb.	19 99	Sept.	23 50¾
Delaware and Hudson Canal 1st Mtg., 1884	112	103	Jan.	1 112	Sept.	23 102
" " " Reg., 1891	113½	104	Mar.	4 114	Jan.	8 103½
" " " 7s., 1877	.....	101½	April	1 105	Nov.	18 101½
" " " Reg. & Coup. 7s, 1894	109¾	99	Mar.	18 113¾	Oct.	7 95
L. V. RR. Con. Mtg., 6s, 1923	97½	106	July	1 107	Jan.	1 97½
" " 2d Mtg., 7s, 1910	111	115⅝	Dec.	9 115¾	April	15 106½
" " 6s, Reg. & Con., 1898	105	107½	May	13 109	June	10 104
Pennsylvania Railroad, 1st Mtg., 6s, 1880	106	110	Dec.	30 110	Jan.	8 103
" " " Gen. Mtg. Con., 1910	103¾	109¼	Dec.	30 109¾	Jan.	15 100¾
" " " Con. Mtg., 6s, Reg., 1905	.....	99	Nov.	11 101¾	Jan.	8 95¾
Philadelphia & Reading Railroad 7s, 1893	108½	105	Feb.	26 113	Oct.	14 102
" " " G. M. 7s, Con. 1911	106¼	99½	Feb.	12 113	Dec.	16 90
" " " Deb. 6s	83¼	60	Jan.	1 83¼	Dec.	16 60
" " " New Convertible 7s	109	62½	Jan.	1 109	Dec.	30 62½
" " " 6s, 1843-44 & 1849-80	....	103½	April	1 104	July	29 101
" " " Con. Mtg., 7s, Reg.	.....	95½	Sept.	30 107¾	Dec.	30 91½
P. & R. C. & I. Co., Deb. 7s	83½	69	Feb.	26 86	Oct.	21 69
" " " various tracts	90	65	Mar.	25 99	Dec.	2 65
Lehigh Coal and Navigation, 6s, 1884	102½	102½	Mar.	11 104½	Oct.	7 99
" " " Railroad, 1897	103½	102	Jan.	22 105	Oct.	7 100
" " " Con. M. 7s	107	80	Jan.	22 108	Dec.	23 80
" " " " Convt. Gold, 1897	108	90	Jan.	1 108	Dec.	30 90

SILVER DISCOVERY IN NEW HAMPSHIRE.—A fine deposit of argentiferous galena has been discovered in the Bristol mine in Bridgewater, N. H. The mine has been timbered to the depth of thirty feet.—*Merrimac Valley Visitor, Dec. 30.*

NOTE ON PETROLEUM IN CALIFORNIA.*

ABOUT ten years ago petroleum springs were discovered in California, and for a time there was much speculative excitement concerning them. I need not say that it resulted in very general disappointment. The subject of petroleum was then but a recent matter of practical study in this country, and neither its geological nor its chemical conditions were as well understood as they have since become. Many geologists, it is true, like the late Dr. Justus Adelberg, and I believe also Prof. Whitney, thought that the stratigraphical features of the region in which petroleum springs had been found were fatally unfavorable to flowing wells, and predicted therefore a deficiency in quantity. Others, influenced no doubt by the extraordinary developments then going on in Pennsylvania, where only small and superficial springs of oil had previously been known, formed a more sanguine expectation. For the time, at least, the quantity of oil anticipated did not make its appearance ; but perhaps the difficulties encountered in attempts to refine the crude product had more to do with the abandonment of many undertakings, which, begun upon a speculative basis, and upon an extravagant scale, were ill-calculated to survive the shocks of successive disappointments. The petroleum of California became, under this reaction of feeling, a by-word and synonym of delusion. Out of all the localities where it has been sought, only the regions of Sespe and San Fernando have as yet produced it commercially and successfully ; but the industry in these regions, though modest in dimensions, has become apparently so well established as to demonstrate that the supply of this vainable material in California is not everywhere so deficient in quantity and quality as to be unworthy of attention. The successful refining of this oil seems to vindicate, moreover, the judgment of our fellow-member Prof. B. Silliman, long ago expressed, and repeatedly questioned or ridiculed afterwards. I am indebted to Mr. F. A. Clark, late of the Geological Survey, for the following facts—few, but recent and interesting—concerning the locality and the industry.

The whole territory, including the two districts of San Fernando and San Buenaventura, is about fifty miles square. San Fernando district is situated in the northwest corner of Los Angeles County, and is distant, at its farthest point, not more than ten miles from the Southern Pacific Railroad. It lies in the foot-hills and on the northeast slope of the San Gabriel mountains, having Santa Clara Valley on the north. The main belt of oil-bearing shale can be readily traced, in a width of 400 to 500 feet, for about six miles northwest and southeast, between walls of sandstone, dipping southwest 32°. On the east side flank of the shales, in cañons and on mountain spurs, numerous oil wells are located. The district contains one flowing well, giving 40 barrels daily. The crude petroleum has a gravity of 40° Beaumé. There is a refinery, which produces from the crude petroleum 60 per cent. of illuminating oil of high quality (120° to 130° fire-test) and 25 per cent. of fine-grained lubricating oil, of 18° gravity, the remaining 15 per cent. being fuel. None of the wells in either district carry paraffine.

San Buenaventura district is west of San Fernando, in San Buenaventura County, 30 miles from the Southern Pacific Railroad, 40 miles from Los Angeles, and adjacent to the sea, at the port or San Buenaventura. This district is also mountainous, being situated in San Gabriel range, and traversed by Sespe creek. It contains large petroleum springs, the oil of which finds its way down to the shore and floats for many miles out on the ocean. The district has a small refinery, producing from crude oil 59 per cent. of illuminating oil, of 130° fire test, transparent and colorless as water, free from strong odor, and said to be equal in every respect to the best Eastern kerosene.

It is but lately that the development of these districts have achieved this measure of success. The well-known promptness and energy of Californian enterprise will doubtless greatly accelerate henceforward the progress of the new industry. A large refinery is now erecting at Newhall, a station of the Southern Pacific Railroad on the Santa Clara River ; and a narrow-gauge railroad is projected, to run from Newhall through the oil regions, 50 miles to the Pacific. Having the advantage of the experience gained in other oil fields, the stimulus of a strong home market, and the chance of exporting surplus product to the South Sea Islands, or to China and Japan, the business is surrounded with favorable commercial conditions.

THE DIVINING ROD.

TO THE EDITOR: Sir—I have had occasion before to remark that the evidence of one man who heard a bell ring is worth that of a dozen who did not hear it. With all due respect to your correspondent, C. W. Kempton, I would assert that I am in the position of the man who heard the bell ring, and do not receive my evidence of the powers of the so-called "divining rod" at second-hand. My own experimental knowledge enables one to arrive at conclusions differing essentially from those of Mr. Kempton, while I assume that I have not only established what he denies, but have also discovered several other remarkable phenomena.

Mr. Kempton is correct in stating that "the movements of the divining rod are caused by an attractive power outside of the person holding it." His second point, that "this attractive power may be to a considerable extent controlled as to its effect on the rod by the will (or unconscious cerebration) of the person holding it," is partly true and partly erroneous. "Unconscious cerebration" is the term which may properly be used, and Mr. Kempton does not know to what an extraordinary degree this holds true; his conclusions prove that he does not. In my opinion this is the sixth, or intuitive sense, of which so little is known.

Thirdly, the attraction is not merely "lessened," but destroyed by the intervention of glass and rubber between the object and the rod.

I affirm, in reply to his fourth and fifth points, that the rod will indicate ores, water, oil, grain, herbs, grass, as either may be found beneath the earth; the depth to these can be indicated through the same influence. As to the sixth, my observations do not prove the correctness of the proposition that there is a stronger attraction when rocks of different kinds come in contact, but I have good reason to doubt his conclusion.

Having answered these six points, I will present some others which I commend to the attention of all who are seekers after truth :

1. All metals, ores, oils, waters, herbs, persons, in fact all elements, send forth a certain subtle flame, each peculiar to itself, and the one penetrates and passes the other, and remains distinct regardless of mass or compactness. A person walking over the earth passes through and over these flames or emanations, and is affected alternately by the one or the other. Each substance has its peculiar attraction, and may be distinguished the one from the other.

2. This being so, the unconscious cerebration, or galvanic action of the brain,

* A paper read by R. W. Raymond of New York, at the Philadelphia meeting of the American Institute of Mining Engineers, October, 1876.

likewise may record, through the delicate nerves of the human body, the depths of the substances according to a measure given by the conscious cerebration.

3. Not only may the difference between the different substances and their depths be told by the action of the nerves and a connecting rod between the action of the dual brain, but the thickness of the substance itself may be as certainly told.

In conclusion, I will add that from some remarkable experiments made by myself, I am enabled to say that there is a grand revelation near at hand upon this subject, which will enable us to penetrate farther into the secrets of the rocks than has ever been dreamt of in the philosophy of any modern geologist.

I trust that Mr. Kempton will not take my criticism of his propositions in any other way than as a friendly act of one who is desirous that he, as well as other seekers after truth, may not be misled.

The whole subject of the "divining rod" is referrable to the "black art," and as much as I have gathered and discovered upon the subject, I judge that there may be, or may have been, a much larger collection of facts than I can offer, in the lost or mouldering parchments of some old recluse of the past age.

Furthermore, I believe that it is at this epoch as possible to make a survey of the underground strata of a plot of ground, as it is for an ordinary surveyor to make a map of the surface.

CHARLES LATIMER.

CLEVELAND, OHIO, Dec. 27, 1876.

ON THE DETERMINATION OF CARBON BY MAGNETIC TESTS.*

Being the Results of Tests Made at the Works of the Otis Iron and Steel Company, Cleveland, Ohio, Under the Direction of the Manager, Mr. S. T. Wellman.

By Charles M. Ryder.†

IN presenting this paper to the Institute I beg leave to mention, first, the results which I have obtained and the apparatus which I have employed, and to follow this with a brief description of the steps by which I have perfected this process.

My present mode of testing is as follows: I obtain, "either from the furnace or from the finished product in any stage in which it may chance to be," a small test piece, usually about ¾ of an inch square by 3½ inches in length. I place this test piece upon the poles of an ordinary electro magnet, for about one minute, and thus magnetize it to its extreme limit. I then place it upon an indicator (which I will shortly describe), on which indicator there is already placed a piece of steel of similar form which has been magnetized in the same manner, the percentage of carbon of which second piece is definitely known. I then, by means of a scale, which forms part of the indicator, marked in degrees of carbonization, read the exact percentage of carbon contained in the unknown piece.

My apparatus consists of an ordinary electro magnet, connected to a suitable battery of moderate power, by which I magnetize the pieces as before described, and of an indicator which consists of a magnetic needle suitably mounted or suspended, so that it is free to deviate a few degrees only from the zero point, and having a rest, which is used to check the vibrations when in use, and to support its weight when not in use. At a right angle to the natural position of the needle I have a scale about 3 feet long, the zero point of which coincides with the natural position of the needle. This scale is marked in each direction from the zero point, in degrees of carbonization.

The marking of the scale is in accordance with the following rule: Taking the carbonization of the steel as a basis, I maintain the same proportion between the squares of the distances on the scale, as exists, between the percentages of carbon in the steel, for instance, if ·08 of one per cent. of carbon is marked at 4 inches from the zero point, then, ·32 of one per cent. would be marked at 8 inches from the zero point, as the square of 4=16 bears the same proportion to the square of 8=64 that 8 does to 32.

On this scale I place the test pieces of steel, the one of known carbon being placed in one direction from the zero point, so that its end nearest the needle shall be at the figure on the scale, which represents the percentage of carbon which it contains, and the unknown piece being placed on the opposite end of the scale, is moved along the scale until the needle maintains its natural position at the zero point. The end of the unknown piece nearest the needle will then rest at a figure on the scale, which represents the percentage of carbon which its contains. The indicator is also provided with leveling and adjusting screws for keeping the needle in its natural position.

Such, in brief, is the present method I use, being the result of some three months' experiment with test pieces of known carbonization. So far as accuracy is concerned, I have compared these tests with repeated chemical tests of our most trustworthy chemists, and with the mechanical working of the steel, and I am convinced that, owing to the simplicity of the process, the readiness with which it may be repeated or proved with a number of standards of different carbonizations, and the fact of its dealing with a larger mass of metal than is used for chemical tests, it gives a more correct indication of the percentage of carbon in a mass of steel than the ordinary tests of the best chemists; while for carbons ranging from ·04 of 1 per cent. up to 1 per cent., I can determine the carbon more accurately in one reading than it can be determined by the color test in five or six, provided in both methods that the carbon is not even approximately known.

As regards the time required for an accurate test, I have cast tests from metal in the open-hearth furnace, cooled them in a blast of cold air, and read the carbon, in something less than five minutes, my apparatus being some 300 feet removed from the furnace.

In testing the finished product, which may be of any uniform shape and size, one test piece may be kept on the magnet and one at the indicator, so that the reading is very rapid.

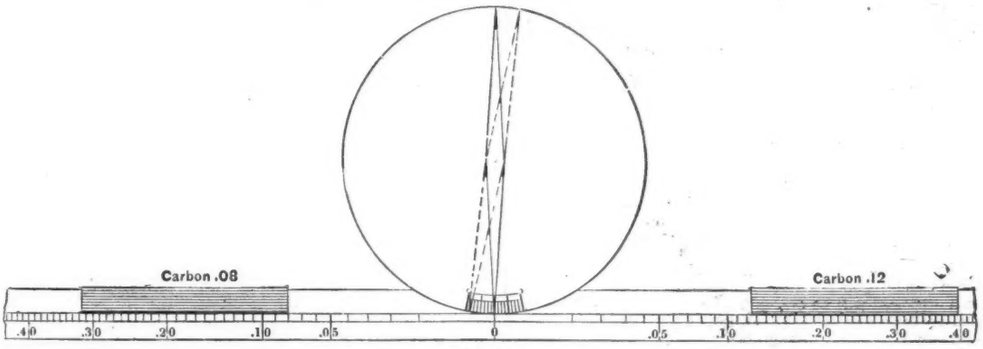
I will now give a brief sketch of my experiments and observations. I began operations with a small pocket compass, using the ordinary open-hearth test ingots, slightly magnetized by breaking, having accidentally observed that they exerted different powers on the magnetic needle. Convinced that nothing could come from these experiments with irregular shapes, I next tried pieces which had been pulled asunder in a testing machine, with which I obtained quite good results.

I then constructed a small needle which I suspended in a glass jar, placing the jar on a sliding-scale arrangement, similar to my present form, except that the scale of carbonizations was a scale of equal parts. By accident the angle which the low carbons presented to the needle was such, that with pieces of a certain form the readings were very correct, and for some time I supposed the scale of equal parts to be correct. A change in the form of the test pieces, however, soon showed the error.

About this time I began using the electro-magnet for magnetizing the pieces, and was led into some errors by placing the sides of the test pieces in close contact with each other. This increases the comparative difference of two pieces of different carbonization, so that the reading on the indicator is not correct.

For absolute accuracy I prefer that both the standard and the piece to be tested shall be placed side by side upon the electro-magnet, in the neutral condition, *i.e.*, being entirely without magnetic force, which condition is obtained by simply heating the pieces red-hot, and allowing them to cool slowly; and I am having a magnet constructed with which I hope to magnetize a large number of pieces at the same time, side by side, thus multiplying the proofs of the first reading.

So far as this neutral condition is concerned I have used the same test piece for a standard for some weeks without paying any regard to it, merely placing the standard on the magnet each day and restoring what force it had lost by time. I have also found it impossible to exceed a certain amount of force, even by keeping it on the magnet for half a day, the extreme limit being reached in one minute. The test pieces may be used hardened or tempered, but I have obtained the best results without hardening the pieces.



PLAN OF
MAGNETIC CARBON INDICATOR
used by
CHA'S M.RYDER.

Since perfecting my experiments and applying for letters-patent for the United States, I have had brought to my notice a work published in London in 1839, entitled "Scoresby's Magnetical Investigations," written by the Rev. Wm. Scoresby, in which I find many similar experiments, the object of which was to perfect the manufacture of magnetical instruments, such as sea compasses, etc. But owing to the crude state of steel-making at that time as compared with its present condition, and the still more noticable lack of knowledge as regards the chemical elements of steel, "the writer of the work not being connected with the steel industry," he seems not to have arrived at any practical or useful test to determine the elements of steel, but only to tell whether it was suitable for magnetical apparatus.

I will quote a few passages from this work. In Chap. VII., p. 74, Scoresby says:

"The principles of inductive science lead directly to the conclusion that the sustaining power of the magnetic condition in a mass of steel should afford the means of determining, as to the degree of carbonization at least, the quality of such steel, for as simple uncarbonized iron, notwithstanding its high capacity for magnetism, possesses extremely little power of retention, and as thoroughly carbonized iron, with no higher, but rather a lower capacity, has very great capability for permanent magnetism, the inference becomes obvious, and the conclusion apparently inevitable, that a partial degree of carbonization must be attended with a limited measure of sustaining energy."

On page 80 he adds:

"And perhaps it is not unreasonable to expect that, under all the varieties of magnetic capacity in each denomination of steel, and in each quality, as respects the kind of iron out of which the steel is converted, experimentally ascertained, a strictly scientific process of testing, founded on these principles, might be devised—a process which might possibly exhibit results, if not as exact, at least as conclusive in

* A paper read before the American Institute of Mining Engineers at the Philadelphia meeting, October, 1876.

† The process herein described is the subject of an application for letters patent in the United States. Filed August 30th, 1876.

certain most important relations of value in the metal, as are obtained by the beautiful process of assaying."

Scoresby adds further on page 81:

"Subsequent experiments, which to a considerable extent I have made, have served still further to support the general views above stated; but they have not been pursued sufficiently far for the determination of the precise effects of the various differences in the methods of the manufacture of steel, or modes of tempering it, by which its magnetic properties may be modified."

Dr. Scoresby's work has much more of value to a maker of magnetized instruments but I do not find anything of value to a steel manufacturer, as the analysis of the samples which he used are in no case given.

I accompany this paper with sketch of my apparatus.

ABSTRACTS OF LECTURES ON MINING.—No. XXV.

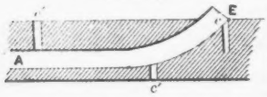
By Prof. W. W. Smyth, M.A., F.R.S., Royal School of Mines, London.

(From the London "Mining Journal.")

THE rate of progress and the expense of driving levels will vary greatly according to the nature of the ground. While in some cases, if the rock be soft, the cost may be not more than £2 or £3 per fathom, in other cases, in that sort of rock which has ordinarily to be dealt with in metallic mines, £8, £10, or £15 per fathom is by no means uncommon; and if there be special difficulties from hardness (accompanied with freedom from joints), water, high temperature, great depths from surface, etc., these sums may be much increased, and the cost of the levels may be £20 or £30 per fathom, as in some Cornish mines, or may even go up to £60 or £80. Cross-cuts, or means for intersecting valuable mineral, will in the first instance be carried as far as possible in the direction of a straight line. It is a question of high importance whether the level can be driven by the assistance of certain joints, strings, or lodes, or whether it will have to be carried entirely through dead rock. It is natural to seek to render the driving as inexpensive as possible by making use of a cross vein or joint, which will give us at least one side of the level; by the help of one of these the cost which would have been necessary to drive through the solid rock may be divided by two or three. It will be usually the case that the cross-cut will be driven by the assistance of lines. Two long strings with heavy weights at the end will be suspended from the roof, then a candle will be placed in the end of the cut, and a person will stand at some distance beyond the strings to see if the direction has been followed which was laid down carefully beforehand. Where you follow the joint you lose the directness of a straight line, which is also the shortest course, and introduce friction into the current of ventilation, and may also render more difficult the tramming or haulage.

When we pass from the cross-cuts to the ordinary levels there is nothing so frequent on going to look at the end of the level as to hear the men say they have lost the lode. This may be due to several causes, to the undulation of the vein itself, etc. Again, there may be some doubt as to whether the best lode or the best part of a lode is being carried in the level. The first case of this is represented in Fig. 23, where, on examining the end of the level, E, no signs of the lode are to be found. It is then necessary to go back and examine carefully both walls of the lode for any change in the character of the rock; if, as sometimes happens, the country and the lode have very close resemblance it may be impossible to observe any such sudden change. It would then be necessary to test the direction and see in what part of the level the men had gone out of the line, if any sharp angle occurs that will probably be the point. Then the workings have either to be begun again at the point of deviation, or as is more commonly done, a cross-cut will be driven from *c* into the lode. In lodes like that figured, which are larger than the levels, it is a great mistake not to drive frequent cross-cuts on both sides during the working (as at *c' c*) to see that nothing valuable is being left. There is another reason why deviations of this kind are likely to occur. If the ground is set by tutwork without any tribute, the men will naturally push their work forward in the direction in which they can earn most wages, so that it needs the constant care of the captain to keep them in the right direction. In fact, the captain will have to attend to two points, he will have to see that they keep the level horizontal, and if they have gone upward will set them to take up the sole to restore the horizontality; this is especially necessary if rails have afterwards to be laid; in the second place he will have to see that they keep in the direction of proper portion of the lode. Similar mistakes as that referred to above may also occur when the lode is smaller and contained in the level.

FIG. 23.



A second case, represented in Fig. 24, is somewhat similar to the last, except that here the level has gone straight, but the lode has turned out of the direction, so that at the end, E, there is no trace of the lode, and no sign of veinstone. Here, again, it will be necessary to search back, breaking off pieces of the rock so as to get a fresh face, and look for indications of the lode in the walls, or drive cross-cuts. This is especially the case where the vein is nipped or changed, where, for example, magnificent veins of 8, 10, or 15 feet wide will in parts be reduced to the thickness of a piece of cardboard, and of a scarcely visible joint. A somewhat similar appearance will occur now and then when a branch falls into the lode, and a greater freeness of the ground from joints, or from its being of an easier character for working, induces the men to turn away from the main lode. There is still another case, which is not referred to in books, but of which the lecturer had seen several instances and was inclined to think the occurrence more frequent than was generally, believed. The lode may not be continuous in a straight line, but portions of it may be continued in the same direction, as shown in Fig. 25. Having left the lode at L, and driven on some distance beyond without finding traces of it, that distance, LE, varying according to the experience in the district—perhaps not more than 5 or 6 fathoms—then a cross-cut in a direction varying according to former experience may strike a second portion of the lode at L'. In some cases these may be merely shoots of ore within the same walls, but some cases the lecturer had examined were by no means bounded by the same walls. The second portion of the lode may be at the distance of a few feet from the first, or it may be several fathoms. It is not really a case of two parallel lodes, nor of two branches of the same lode; the first lode seems truly to end at L, but the force which caused the fissure appears to have produced the second one in the same direction, though not in the same straight line. The lecturer had seen this repeated more than once in the same line, and he had looked very carefully for any trace of its being due to a heave, but could not find that the setting on again of the course of ore was connected with anything of the kind. When you come to the end of a lode it is a very important point to look to the nature of the ground, and endeavor to ascertain whether any change has occurred, to drive short cross-cuts right and left to see what the nature of the ground really is into which you have come. At the junction of granite and killas, or slate rock and greenstone, and in other similar cases it may be a very important matter indeed to look to this point, and to endeavor to arrive at some generalizations as to the effect of particular classes of rocks on the veins, sometimes impoverishing, and at others actually extinguishing them.

FIG. 24.

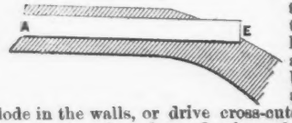
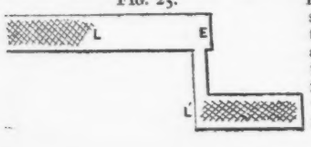


FIG. 25.

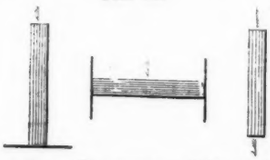


It is a consideration requiring all the care and experience of the miner as to where and how the levels shall be placed with reference to the lode. Take the case, for example, of the small tin lodes, or those of silver or gold, where it is necessary to take away some of the country in order to get sufficient room in the levels. Is the lode to be included in the middle of the level, or will the ground work more easily (as it is most likely to do) if the lode is on one side of the level? In the latter case the level could be driven first, and the lode worked separately afterwards, as pointed out previously. A condition which more frequently occurs in Cornwall, Wales, Saxony, etc., is that the breadth of the lode is such that it can conveniently be taken for the breadth of the level. The walls may then be quite smooth, or may be rough and rugged, sometimes so much so that men must be employed to cut off the corners. Where the lodes are much larger, as the great lodes in the Isle of Man, or in the South of Spain, where they exceed 1 or 2 fathoms in width, it would obviously be a difficult thing to cut the whole, on account of the difficulty of securing the roof. It will then be a question in which part of the lode the level should be placed, whether in the middle, or whether the hanging or the foot wall should form one side. Several things have to be looked to in determining this; you will probably have to lead water along the level, and if it be on the hangingwall side and the lode be at all pervious, as lodes are apt to be, the water will pass down the lode and inconvenience the deeper workings; on the footwall side a little guter for the water might be cut in the more solid rock. If the lode be a poor one throughout it may be that the level may as well be driven in one part as in another, except as regards the water, but if the lodes have large portions to be worked away the case is different. Obviously, the subsidence would interfere with a level on the side of the hangingwall, or in the middle of the lode, and in either case the level would have to be very strongly supported. In other cases, again, you may have to work a lode of great height and width throughout, and to reckon on working the great bulk from the lower levels. It would, therefore, be difficult to establish your levels if they had to remain in the breadth of the lode, and you have again to make the choice between driving the levels in the hanging or the foot wall. It may be that it is easier to drive in the country than in the lode—*e.g.*, in some instances where you have a hard capel lode in granite country—and therefore an exploring level would be driven in the granite with cross-cuts into the lode. You have an instance of this in some granite districts near Liskeard, where granite is so soft as to yield readily to the pick. If you drive in the hangingwall and then prove the lode to be good to the footwall, large excavations would have to be made, and you would have this disadvantage, that the hangingwall would be apt to break away, especially if it contained parallel strings, and consequently you would be apt to lose by levels. The same thing would not occur to anything like the same extent on the other side. It may be desirable to go some distance into the country, as at the Restormel Iron Mine, to place the level on the footwall side at a distance of some 3 or 4 fathoms, and this will be a permanent roadway. There is this advantage in driving the levels at such a distance, the putting in cross-cuts that the lode can be worked from this point to the next, leaving plenty of room for the men to escape to a secure place out of the way of the blasting and of falling masses; and even if the ground falls together, for the taking away of the center and the looseness of the sides you are safe to retain a permanent roadway. There are not many cases in which you can afford to drive the level at such a distance, making the cross-cut so long, but if the ground were hard (in the instance quoted it is not hard) there would be no reason to drive so far away.

Almost universally you have in some part of the mine to support the workings, whether in the lode or the country, and the question soon arises whether this shall be done by putting in timber (which is the more usual plan), or masonry, or brickwork. From the facility with which timber can be introduced into the mine and replaced from time to time if necessary (owing to the uncertainty of the direction of the pressure and the uncertainty of the foundation) it is generally preferred at most European mines. If we can say that a level has to stand for a certain time—it may be years—and on a certain foundation, it may be well to put in brickwork, but more usually the levels are merely temporary. From one cause or another of this kind timber is almost universally employed in metalliferous mines, and often in collieries where circumstances are not such as to ensure the requirement being for any great time. In many of our mines the timber is a great source of expense, several thousand pounds, from its constant renewal, yet for convenience of carriage and preparation this material carries the palm. In some cases special timbermen have to be employed constantly, in others the men may be trusted to set their own timber. Certain districts, and even certain nationalities, seem particularly ready at this; they appear more ready to get at the principles of mechanics involved than do others. Thus the districts of the Harz and Cornwall may be instanced where the men seem to have a natural facility in seeing in which way the strain of rock is likely to come on the timber, and therefore in what way the latter can be set to best advantage. The first points to be attended to in obtaining timber are price, strength, and resistance to decay. The price varies much, according to geographical circumstances. As to the strength, we must remember that the strain may fall in several different ways, and therefore that several different kinds of wood may have to be employed. One particular point is that the wood should be able to resist compression where the weight rests on it above and tends to crush the fibres together. A second kind of strain is that where, having a fixed and firm support on each side, the object is to resist transverse action on the fibre, which tends to break it across. The third case is that where you have the timber resisting the strain in opposite directions where the tendency is to tear fibres asunder, as in the case of the

pump-rods. The three cases are illustrated in Fig. 26, and arrows representing the direction of the pressure.

FIG. 26.



Of all classes of wood the fir and pine are used most largely, because of the convenience of the regularity of growth of that wood, facility of cutting and shaping it, and the facility of carrying it into the mine. Many of these kinds of wood have, besides, the advantages of being light, cheap, straight, and tolerably durable. Among these the larch (*Pinus laryx*) is most largely preferred amongst miners, whether the place be wet or dry. The spruce (*Abies excelsa*) is used to a considerable extent in some districts, and is partly imported here. It is inferior to the larch, but is somewhat superior to the silver fir (*Pinus abies*), which latter gives a very inferior kind of wood, but, from growing abundantly in certain parts of Europe, is largely used. The rings of annual growth are looser in this fir, and it appears to go to decay more quickly. Another important tree is the Scotch fir (*Pinus sylvestris*); its character varies according to the place where it has grown. That from Scotland is not looked on so favorably as that from the neighborhood of the Baltic, which is an admirable wood. The oak is to be regarded as a most excellent timber, both as to strength and durability, but from the greater expense in purchasing, and then in fashioning, it is only employed where great trustworthiness is required, as in shafts. In some cases, however, the smaller and irregular branches of oak may be obtained, and they are very valuable. Of other woods, beech is sometimes employed, but it is somewhat brittle—birch, apparently, still more so. In the southern parts of Europe other woods are used; in parts of Hungary red and white beech, and in some cases the Spanish chestnut, the latter being said to stand remarkably well; a wood of a similar character—the sweet chestnut—is also largely used. In certain districts the acacia and other species, besides the common oak, are employed.

PRODUCTION OF PIG IRON IN THE UNITED STATES IN 1876.

WE are indebted to the courtesy of JAMES M. SWANK, Esq., the Secretary of the American Iron and Steel Association, for advanced proofs of the following statistical tables. We have had frequent occasion to refer to the admirable manner in which Mr. SWANK has compiled the statistics of our iron trade, and the figures in the following table, we are told, were obtained "in part directly from the producers, and in part from a corps of *one hundred special correspondents* of this office, residing in every district in the country which makes pig iron—correspondents selected by us because of their experience and judgment as iron manufacturers and business men, and because of the superior facilities possessed by them for procuring the information we desired"

States and Districts.	Production—Net tons.		Stock on hand Dec. 31. Net tons.	
	1875. Exact figures.	1876. Estimated.	1875. Exact figures.	1876. Estimated.
New England	36,581	18,000	35,604	25,000
New York	266,431	181,000	88,903	67,000
New Jersey	64,069	31,000	26,095	5,000
Pennsylvania	960,884	989,000	246,908	275,000
Maryland	38,741	20,000	13,767	4,000
Virginia	29,085	6,000	9,749	4,000
North Carolina	800	.....	.....	.....
Georgia	16,508	15,000	3,400	3,000
Alabama and Texas	25,108	29,000	20,921	20,000
West Virginia	25,277	45,000	3,400	5,000
Kentucky	48,339	35,000	27,590	15,000
Tennessee	28,311	27,000	19,559	10,000
Ohio	415,893	353,020	128,033	124,000
Michigan	114,805	84,000	52,167	31,000
Indiana	22,081	13,000	6,381	2,000
Illinois	49,762	53,000	5,816	10,000
Wisconsin	62,139	51,000	10,392	5,000
Missouri	59,717	69,000	61,769	55,000
Pacific States and Territories	1,150	1,000	454	....
Total	2,266,581	2,050,000	760,908	660,000
PENNSYLVANIA AND OHIO BY DISTRICTS.				
PENNSYLVANIA—				
Lehigh Valley	280,360	260,000	50,878	43,000
Schuylkill Valley	123,184	129,000	79,155	114,000
Upper Susquehanna	71,731	77,000	13,980	29,000
Lower Susquehanna	79,717	101,000	19,163	19,000
Shenango Valley	137,025	150,000	35,097	30,000
Allegheny County	131,856	135,000	4,930	2,000
Miscellaneous bituminous	102,520	120,000	21,323	22,000
Charcoal	34,491	17,000	22,392	16,000
Total for Pennsylvania	960,884	989,000	246,908	275,000
OHIO—				
Hanging Rock bituminous	36,899	35,000	17,523	15,000
" " charcoal	57,413	40,000	53,882	38,000
Mahoning Valley bituminous	115,993	134,000	14,611	21,000
Miscel. bitum. and charcoal	205,588	174,000	42,017	50,000
Total for Ohio	415,893	383,000	128,033	124,000

NOTES.

THE HIDDEN TREASURE SILVER MINE, an eastern extension of "The Queen of the Hill's," is conceded to be one of the most valuable properties in Mosquito. The openings consist of a tunnel thirty-five feet in length. The vein is well defined and carries a pay vein twenty inches in width, assaying well up in the hundreds.

HAMILTON COAL MINES.—The tunnel now being driven into these coal mines, will soon be completed. The design of the tunnel is to cut the vein at a greater depth and to drain the mine. The coal which is now being mined is of superior quality and it is expected that when the vein is intersected by the tunnel the coal will compare favorably with the Canon City coal.—*Fairplay Sentinel*, Dec. 21.

OPHIR GOLD AND SILVER MINING COMPANY.—(Annual Report.) The annual meeting of this Company was held in San Francisco on the 20th of Dec. Following is the Superintendent's report: During the last year 68,011 net tons of ore have been extracted from the mine, of which 67,737 tons were worked, yielding bullion amounting to $2,340,848 70. In the past year, besides the excavation of ore, a vast amount of labor has been performed in the mine—prospecting and sinking main incline, which is now nearly approaching the 1,800-feet level; 3,248 feet of drifts and crosscuts; 441 feet winzes; 445 feet main incline (from 1,465-feet level down); 1,600 feet new compartment of vertical shaft: ore bin head of incline, 3 pump-bob pits, 6 water-tank pits for new pumps have been constructed, from which alone 123,481 cubic feet of hard rock have been excavated in the forming of the main incline. The ore extracted during the year has been taken from the 1,300-feet down to the 1,110, but principally from the 1,600-feet level, which has been extremely prolific and not yet exhausted, nor fully prospected. Several crosscuts now being made on this level I fully hope will yet develop good ore reserves. The 1,650-feet level is just now opening, the first sill timbers now being laid. So far the prospects on this level are promising, and from the character of the ore the sills of the 1,600-feet level above are laid upon should yield well. On the 1,700-feet level work is being pushed with all dispatch. This level having been completely closed, as also the last shaft by which it has been worked, having been caved during the submersion of the bottom of the mine, has not been fully opened yet. Only very recently a winze connection has been established with the 1,600-feet level; reducing temperature to a point advantageous for working. The lateral drift has not been opened south to within 200 feet of the California line, and no crosscutting or prospecting on the south end has been possible during the year. The north portion of this drift has been continued close to the west wall; up to the Mexican south line it is in very favorable vein formation, crossing several seams of quartz of some value. Preparations for starting east crosscuts at this point are being made, and I have every confidence of valuable results. According to the figures given above the average yield of the ore was only about $33¾ per ton. The Secretary's report contained the following details: Receipts Cash on hand December 15th, $211,254; from bullion, $2,340,848; sundry sources, $41,399. Disbursements—General expenses at mine, $16,815; Buck's shaft construction, $773,374; machinery for same, $258,121; Ophir mine, $41,945; office expenses in San Francisco, $10,292; Buck's shaft building, $49,872; discount on bullion, $223,032; milling, $812,840; cash on hand, $379,600; incidentals, $24,468.—*Gold Hill News* Dec. 21st.

THE PRODUCT OF THE UTAH MINES FOR 1876.—A correspondent of the Chicago *Inter-Ocean*, under date of Salt Lake City, Dec. 23, gives the following as an estimate of the production of the mines of Utah for the year just closed:

	Production for 1875, lb.	Production for 1876, lb.	Increase, lb.
Lead ore	10 421,453	19,509,793	9,088,340
Bullion	32,737.138	40,646,997	7,909 859
Copper ore	1,147,295	1,389,569	242,274
Copper bullion	....	43.715	43.715
Copper matter	....	294.474	249.474
Total	44,305,866	61,839,548	17,533,672

Reduced to values amount to:

157,539 lb. copper, at 20 c	$131,507
50,401,893 lb. lead, at 6 c	3,024 113
1,946,915 oz. silver, at $1.10	2,141 606
8,820 oz. gold, at $20.67	182,309
Silver bricks, $70,000 per mo	840,000
Gold from placer mining	100,000
Total gold valuation	$6,419,535

The mines never looked so well before, business generally is good and on a good foundation, and the coming year is full of promise.

IDAHO (G. V.) GOLD MINING COMPANY.—(Annual report.) The annual meeting of this company was held in Grass Valley, California, on the 19th of December. The Superintendent presented the following report for the year ending Nov. 30, 1876:

During the year we have crushed 29,720 tons of quartz, of which 3,494½ tons came from the 500-feet level, 1,726 tons from the 600-feet level, 6,783 tons from the 700-feet level, 12,794 tons from the 800-feet level, and 4,922½ tons from the 900-feet level. This gave a total yield of

31 024 oz. bullion, value	$541,817 44
Sulphurets	8,919 47
Specimens	17 00
Total yield of tailings	11,420 15
Total yield from quartz	$562,274 06

—being at the rate of $18.92 per ton.

Mill and mining expenditures	$266,092 65
Saving sulphurets	6,724 00
Grinding tailings	1,563 75
Main shaft	10,800 93
Prospecting 600 east level	1,215 00
New pump-house	1,407 08
General account	10,208 59
Total expenses for the year	$298,012 00

The capital stock of this company amounts to $310,000, on which monthly dividends ranging from 5 to 10 per cent. have been declared during the year, the aggregate amounting to $255,750, equal to 82½ per cent. on the capital stock. The total receipts of this company during the past eight years have amounted to $4,063,819.92, from which dividends have been paid to the stockholders as follows: 1869, 11 dividends, aggregate 55 per cent., $170,500; 1870, 7 dividends, aggregate 12 per cent., $37,200; 1871, 12 dividends, aggregate 75 per cent., $232,500; 1872, 11 dividends, aggregate 52½ per cent., $162.750; 1873 12 dividends, aggregate 220 per cent., $682,000; 1874. 12 dividends, aggregate 102½ per cent., $317,750; 1875, 11 dividends, aggregate 55½ per cent., $172,050; 1876, 12 dividends, aggregate 82½ per cent., $255,750; total dividends for 8 years, $2,030,570, being 88 dividends, and aggregating 655 per cent. on the capital stock. This is equal to $42,300 as the average yield per month during the whole eight years, or $21,150 per month has been paid to the stockholders—being an average dividend of $6.82½ per month.—*Foothill Tidings*, December 23.

COST OF LIGHTING THE PUBLIC LAMPS OF NEW YORK for the past nineteen years compared with the prices paid during each year for gas coal:

Year.	New York.	Manhattan.	Harlem.	Metropolitan	New York Mutual.	Contract price actually paid for gas coal.
1858	$25 79	$25 00	$28 80	.....	.....	$7 00 @ $7 50
1859	25 79	25 00	28 80	.....	.....	6 50 @ 7 00
1860	25 79	25 00	28 80	.....	.....	6 75 @ 7 00
1861	25 79	25 00	28 80	.....	.....	6 50 @ 7 00
1862	25 79	25 00	28 80	.....	.....	8 25 @ 8 75
1863	27 79	25 00	28 80	.....	.....	13 00 @ 13 50
1864	25 79	25 00	28 80	.....	.....	11 00 @ 17 00
1865	45 00	53 00	50 00	$50 00	.....	10 50 @ 11 75
1866	45 00	53 00	50 00	50 00	.....	10 25 @ 10 75
1867	45 00	53 00	50 00	50 00	.....	9 75 @ 10 25
1868	45 00	53 00	50 00	50 00	.....	9 50 @ 10 00
1869	45 00	53 00	50 00	50 00	.....	8 50 @ 9 00
1870	45 00	53 00	53 00	53 00	.....	7 50 @ 8 00
1871	45 00	53 00	53 00	53 00	.....	7 50 @ 8 00
1872	41 04	41 04	41 04	50 00	.....	8 00 @ 8 25
1873	39 00	39 00	39 00	.....	.....	8 25 @ — —
1874	33 00	33 00	33 00	39 00	$35 00	7 55 @ — —
1875	28 00	28 00	38 95	28 00	29 17	6 50 @ 6 75
1876	23 00	23 00	37 50	34 12	25 75	5 50 @ 6 00

Note.—These rates, up to 1872, refer to Newcastle gas coal, which was principally used to that time. From 1872 the price is that of American (Pennsylvania and Westmoreland) gas coal, which have altogether supplanted the English article.

ANNUAL BALANCE SHEET OF PRECIOUS METALS ON THE PACIFIC COAST FOR 1876.

WELLS, FARGO & CO., EXCHANGE, BANKING AND, EXPRESS,
SAN FRANCISCO, December 30, 1876.

EDITORS RECORD-UNION: The following is a copy of our annual statement of precious metals produced in the State and Territories west of the Missouri river, including British Columbia and the west coast of Mexico, during 1876, which shows an aggregate yield of $90,875,173, being an excess of $9,986,136 over 1875, the greatest previous annual yield in the history of the country. Arizona, California, Colorado and Nevada, increase; British Columbia, Mexico, Montana, Oregon, Utah and Washington, decrease. It is possible the falling off in Montana is more apparent than real, as we have not credited so much base bullion and ores by $250,000 as were claimed for it. The notable increase is in Nevada, which produces more silver than any other State or Territory; and of gold and silver combined, five-ninths of the whole product of the United States. A large gold yield is often claimed for Arizona and New Mexico, but as $2,710 000, or an average of less than $100,000 per year, is the total amount deposited in United States Mints since 1848 as from those Territories combined, we think such claims cannot be substantiated. The total yield west of the Missouri river for 1877 may equal that of 1876, but it does not now appear probable.

The lead product of Utah, Nevada and California about equals that of Missouri, Illinois and Iowa.

STATEMENTS OF THE AMOUNT OF PRECIOUS METALS PRODUCED IN THE STATES AND TERRITORIES WEST OF THE MISSOURI RIVER DURING THE YEAR 1876.*

States and Territories.	Gold dust and bullion by express.	Gold dust and bullion, other conveyances.	Silver bullion by express.	Ores and base bullion by freight.	Total.
California	$14,635,963	$1,463,596	$796,308	$1,719,940	$18,615 807
Nevada	220,803	22,080	44,725,802	4,312,079	49,280,764
Oregon	919,257	229,814	.....	.....	1,149,071
Washington	56,702	5,670	.....	.....	62,372
Idaho	1,182,222	236 444	220 695	35,000	1,674,361
Montana	1,956,553	195,655	274,824	350,000	2,777,032
Utah	47,795	4 779	781,263	4,373,682	5,207,519
Colorado	2,829,877	.....	2,796,661	1,364,109	6,990,647
New Mexico	76,392	.....	255 281	18,621	350,294
Arizona	103.582	.....	336,564	671,900	1,111,992
Mexico	51,880	.....	1,620,656	541,212	2,213,748
British Columbia	1,31C,515	131,051	.....	.....	1,441,566
Totals	$23,391,487	$2,289,089	$51,808,054	$13.386,543	$90,875 173

The method and form of the foregoing is exactly similar to that of statements which we have complied since 1870, wherein no attempt was made to show the amount of gold contained in silver or dore bullion, or the lead and copper in base bullion, but the violent fluctuations of silver as compared to gold, during the present year, renders an analysis desirable, and we have spared no pains to arrive at a correct conclusion, and the results are as follows: In round figures, of $37,000,000 produced from the Comstock Lode this year, $17,125,000, or quite 46 per cent. was gold; of the whole product of Nevada, 35 per cent. was gold, and of the total silver product, so-called, $18,647,925, or 31 per cent. was gold The gross yield is constituted as follows: Gold, $44,328,501; silver, $41,506,672; Lead and Copper, $5,040,000; total, $90,875,173.

Following the method indicated and the percentages arrived at, for 1871 to 1876, inclusive, for which years we have our own compliations to depend upon, the products separated are as follows:

YEAR.	Total Product.	Lead.	Silver.	Gold.
1871	58,284,000	2,100 000	20,286,000	35,898,000
1872	62,236,959	2,250,000	20,527,500	39,459.459
1873	72,258,693	3,450,000	28,252,100	40,456,593
1874	74,401,045	3,800,000	30,498,000	40,103,045
1875	80,889,058	5,100,000	34,043,910	41,745,147
1876	90,875,173	5,040,000	41,506,672	44,328,501

We hoped to segregate the gold, silver, etc., for the years from 1870 to 1861 inclusive, also, but there are no details obtainable that will stand the test of so careful an analysis as the years of 1871 to 1876 inclusive have been subjected to, and we see no way of reconciling the discrepancy between $56,000,000 gold and silver published as the estimate of United States officials for 1870, and $58,284,000 shown here for 1871, which was a more productive year by at least $4,000,000 than 1870. We are confident that similar discrepancies or exaggerations as to the product of the United States exist in the estimates usually accepted for the years from 1870 to 1861 inclusive, and possibly all the way back to 1848.

Reasoning from what is known of our own country's product as compared with estimates frequently put forth, we are inclined to believe that there is almost universal exaggeration as to the amount of gold and silver produced throughout the world.

NOTES.

THE ANDES SILVER MINING COMPANY held its annual election on December 13. The Superintendent's report was accompanied by photographic views of the machinery and hoisting works, also underground plan for the workings of the mine during the past year. The Secretary's report shows receipts during the year of $75,000, being amount collected on assessments Nos. 6 and 7. Disbursements, $56,419.70. Balance cash on hand, $18,580.30.

THE DUNCAN SILVER MINE, on the north shore of Lake Superior, shipped for smelting from September 1st, when the mill started, to November 14th, the close of navigation, 13 tons of rich ore and concentrations. The average yield at market rates was $514.48 per ton. The richest ore assayed, $2,568 per ton. Work is progressing rapidly during the winter in the hopes of developing a paying body of ore, but to December 1st no new strikes had been made.

PANTOPOLLITE, A NEW BLASTING POWDER.—One of the German dynamite manufactories has lately been producing a cheap sort of dynamite which is called pantopollite, the peculiarity of which resides in the fact that it contains a small percentage of napthaline dissolved in the nitro-glycerine. The purpose of this addition is stated to be in order to prevent the formation of the disagreeable nitrous vapors during explosions. The results of practical tests with the material seem to be quite unsatisfactory.

THE PRODUCT OF THE COLORADO MINES FOR 1876 is estimated by the *Mining Review* as follows:

Bullion yield (gold and silver) ore	$6,000.000
Copper (about)	200,000
Lead	a few thousand

This shows an advance of about 10 per cent. over the bullion product for 1875, a ratio of increase which has been kept during the past four years.

The production of Colorado coal is estimated by a correspondent of the *Inter-Ocean* 300,000 tons, which estimate we believe to be excessive.

* There are some small clerical errors in this table but we have not the data to correct them.—ED. E. & M. J.

THE ANNUAL MEETING OF THE GOULD & CURRY SILVER MINING COMPANY was held in San Francisco December 18th. The Secretary's report embraced the following details: Receipts—Cash balance November 30th, $11,022.59; five assessments, $390,-553.18; mine account, $32,251.21; Superintendent's house, $250; F. F. OSBISTON, $26,-412.21; balance, $82,191.24; total, $542,679.43. Disbursements—mine account, $508.-508 79; general expenses, $33.588.04; total, $542,679.43. The stock of this Company is principally held by the Directors of the Bonanza Company.

A NOVEL MINING COURT.—A somewhat novel step has been taken in connection with trades unions. The executors of the Durham Miners' Association and the coal-owners of that important district have jointly appointed a county-court judge, with a salary of £300 a year, to sit as an independent person to hear evidence upon any dispute that may occur between employers and employed. When all the facts have been placed before him he will carefully consider the matter, and give his decision, thus amicably settling questions which doubtless would otherwise result in strikes and lockouts.

GERMAN IRON WORKS.—An official return shows that there were 324 blast furnaces in Germany in 1874. These furnaces worked on an average eight months and twenty days in 1874. The quantity of iron ore used amounted to 4,342.184 tons, of which 4,130,000 tons were produced in Germany itself. The total quantity of pig and cast iron of the first quality produced was 1,660,208 tons. The average number of workpeople employed in the trade was 22 765, of whom 853 were women. Prussia ranked first with 244 blast furnaces. The Rhenish provinces ranked second. The production of pig and cast iron of the first quality in Germany in 1865 was 960,879 tons; in 1871 it had risen to 1,420,830 tons, and in 1874 to 1,660,208 tons, as already indicated. The production of 1873 was, however, somewhat larger than that of 1874.

MENDELJEEF'S PREDICTIONS OF NEW METALS.—It has been suggested that the exactness with which a description of the new metal gallium coincides with that of Ekaluminium, the discovery and existence of which was predicted seven years since by M. Mendeljeef, as an outcome of his theory that "the physical characters of a radicle are periodic functions of its atomic weight," is possibly only a very interesting coincidence. Whether this is the case or whether it is really the climax of a process of pure mathematical reasoning by which radicles which ought to exist may be predicated cannot yet be said, but the regularity with which all known metals drop into Mendeljeef's scale is in favor of the correctness of his theory. Mendeljeef has also predicted the existence of a metal which he has named Ekasilicum in anticipation of its discovery, and which he says will be found in company with arsenic. If this metal should be found his theory must be admitted, and as one of the most remarkable of discoveries.

THE FAILURE OF THE UTAH LIGNITE IN IRON SMELTING.—After running the blast furnace at the iron works in Ogden two days and nights, it was demonstrated that a beautiful clear slag ran out freely, but not a drop of iron showed itself. The cause of this was that the coal would not work right; it is too dry and burns out too quick. It is expected that as soon as a meeting of the stockholders can be called, the furnace will be so changed as to burn charcoal instead of Rock Spring lignite. This may consume thirty days, and will require an outlay of about $1,200. Workmen are now employed removing the 300 tons of iron ore, lime and coal which clog up the furnaces, and which could not be molten by the fuel used. Charcoal can be obtained delivered here in large lots at 14 cents per bushel, and then iron will be turned out to a certainty at proper figures to insure ready sale.—*Odgen Freeman.*

THE SUMMIT COAL MINE, in the hills about eight miles southeast of Livermore, is found to be more and more valuable the further it is explored. The vein was first discovered last spring, and runs in an east and west direction for a mile and a half, and is about six feet wide. A thousand tons have been taken out by hand and tested in flour mills and different factories at Oakland, San Jose, and San Francisco, as well as in Livermore and other towns near here, and the quality has given uniform satisfaction. The coal can now be delivered in San Francisco at a cost of $5 per ton, and could be delivered for $3 if there were a railroad from the mine to the present overland railway, and machinery on hand for hoisting the coal. About a hundred yards south of this vein, and parallel with it, lies another vein of coal, which has not yet been prospected, but looks, on the surface, as if it were larger than the first mentioned one.—*Alameda Independent.*

EXPORTS FROM THE PORT OF NEW YORK FOR 1876.—The following table, from official sources, shows the value and quantity of various articles exported from this city during the past year:

	Quantity.	Value.
Coal, tons	27,804	$133.483
Copper, in pigs, bars and sheets, lb	16,204,625	3.385 242
Steam engines, boilers, and other machinery	...	2,085,668
Petroleum of all kinds, gallons	144,206,534	26,636,910
Quicksilver, lb	82,279	55,386
Zinc, in bars, pigs or plates, lb	673,768	57,286
Agricultural implements, all kinds	....	1,928,590
Carriages, carts, and parts of	....	461,245
Cars, railroad, complete, No.	180	155,324
Clocks	....	708,767
Copper and brass, manufactures of	....	266,068
Gold & silver ware, and other manufactures of	....	55,589
Nails, cwt	27,089	93,561
Iron, miscellaneous manufactures of	....	1,933,536
Steel cutlery and edge tools	....	600,463
Printing presses and type	....	91,829
Scales and balances	....	110,416
Sewing machines	....	1,466,517
Tin, and manufactures of	....	40,186
Bullion, gold	$1,791,829	Coin, silver 724,819
Coin, gold	24,499.329	
Bullion, silver	10,744,275	Total $37,760,250

ELECTRIC ILLUMINATION.—Although the light now for some time in use in the Northern of France Railway station in Paris is economically obtained by means of the Gramme apparatus, there has been one point upon which improvement has been desired. A single light, as used in Paris, although placed at a great height, necessarily throws many very heavy shadows, which contrast most inconveniently with the blinding intensity of the light within its immediate neighborhood. The discomfort attending the brightness of the light has been somewhat relieved by glass shades, but the shadows are, although less severe, still inconvenient. It has hitherto been found impossible sufficiently to multiply the number of lights so as to avoid these defects, but a discovery has recently been made by M. Jablockhoff which seems destined to bring the electric light into common use. M. Denayrouse has brought the discovery before the Academy of Science, and it seems that it offers, with little extra cost, an efficient means of procuring several lights from one source of electricity, and of regulating the position of the carbon points. The most delicate part of the electric light apparatus has been this adjustment of the distance between the carbon points, and it is here that M. Jablockhoff steps in from quite a new path. Instead of placing the carbons end to end, he places them parallel with each other, and separated by some insulating material. The whole is then placed in a cylinder of refractory material in the form of a double carbon wicked candle. By this arrangement the two carbons burn by their lower extremity, there being no necessity for regulators, as the insulating material keeps them at a constant distance. This material as well as the cylinder is consumed in the same time as the carbons, its volatility augmenting the light. Previous to this discovery it was necessary to have a regulator for each lamp, and at great cost, but now a single source of electricity may feed a number of burners, thus permitting the most effective distribution of the light. It has long been known that light emitted from a number of places is more economically and efficiently used than when given out from a single source, though the single flame be equivalent, photometrically, to the sum of the smaller ones.

COAL TRADE REVIEW.

NEW YORK, FRIDAY EVENING, JAN. 12, 1877.

Anthracite.

But very little coal is being moved by vessels owing to the ice embargo. The demand, however, continues very light, and the small quantity of coal that is being marketed has to be sold at concessions, stove coal selling as low as $3.50 f. o. b. at shipping ports. Chestnut coal is more scarce but freely offered at $3.25, which, however, is the circular rate for certain good qualities of this size. Retail dealers are complaining of quiet trade, which indicates that great economy is being practiced in households, as the severe weather we have experienced would in ordinary times have brought about a considerable demand even though the regular number of families had laid in full winter supplies, which has not been the case this season.

The efforts to form a new combination to regulate the production of anthracite coal, which originated in the Lehigh Coal Exchange, has not assumed more than local importance.

Surely "hope springs eternal in the human breast" for on no other theory can we account for this renewed and persistent effort to "regulate the coal trade" in this manner. The late Coal Combination was, as we were so often told, "a great success;" and it certainly did succeed in keeping up the price of coal. Yet three years of this "great success" left the companies in such a condition that within two months after the dissolution of the contract several were on the verge of bankruptcy, and the others were holding their breath in fear and trembling.

The report of the Philadelphia and Reading Railroad Company, which has just been issued, shows specifically how injurious the Combination was to that company, and yet there are those who believe that if they had only done this or had not done that, the Combination would still be "a success." We commend a study of the past to those who wish to see into the future, and a closer study of the fundamental principles of political economy which underlie the successful prosecution of a great industry, to those who propose abnormal stimulants for the cure of business paralysis.

Bituminous.

This trade has been seriously interfered with by snow and ice, although a very good demand for Clearfield coal at Amboy for steamship use is reported. The Cumberland production shows a falling off for the first week of the year of 5,774 tons, as compared with the corresponding week of 1876.

The production for the week ending January 6 was but 134,856 tons, as against 749,103 tons for the corresponding week of 1876, showing a falling off this year of 14,237 tons.

New York.

Wholesale Prices of Anthracite Coal f.o.b. at the Tide Water Shipping Ports per ton of 2240 lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
‡Lackawanna and Scranton at Hoboken and Rondout	3 00	3 00	3 00	3 00	3 80	3 80
Pittston at Weehawken	3 00	3 00	3 00	3 10	3 60	3 35
Wilkesbarre at Port Johnston	3 00	3 00	3 00	3 00	3 75	3 25
Plymouth, R. A.	....	....	3 00	3 00	3 85	3 35
Susque. Coal Co. at Amboy W.A.	3 00	3 00	3 00	3 00	3 75	3 25
Kingston at Hoboken	3 00	3 00	3 00	3 00	3 75	3 25
Lehigh Coals.						
Old Company at Port Johnston	3 75	....	3 25	3 25	3 75	3 25
Old Company's Room Run "	3 75	....	3 25	3 25	3 75	3 25
Sugar Loaf, Hobok. & Amb. "	3 75	...	3 25	3 25	3 75	3 50
Lehigh Coal Exchange "	3 75	....	3 25	3 25	3 75	3 50
Honey Brook Lehigh	2 75	....	3 25	3 25	3 75	3 25
Beaver Meadow at South Amboy	3 75	....	3 25	3 25	3 75	3 25
Mount Pleasant at Hoboken	3 50	....	3 15	3 15	3 50	3 30
Schuylkill Coals at South Amboy.						
Schuylkill white ash	3 00	3 00	3 00	3 05	3 80	3 35
Schuylkill red ash	....	....	....	....	....	....
Lorberry	....	....	....	....	....	....
Lykens Valley	....	....	....	....	....	....
North Franklin red ash	....	....	....	....	....	....

‡ Boats towed by the D. & H. C. Co. at its expense to and from New York harbor.

Per ton.

Freight from Hoboken and Weehawken to New York.... 35c.
" " Elizabethport & Port Johnston to N. York. 35c.
" " South Amboy to New York..... 35c.

Freight by the boats of the companies from Hoboken, Port Johnston, Weehawken, Rondout, South Amboy and Perth Amboy to New York City and vicinity 50c.

Lackawanna coal delivered to carts in New York or Brooklyn, 50 cents per ton additional.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn. at Greenwich, Philadelphia	$4 70	$6 00
" " at S. Amboy	5 50	6 00
Red Bank Cannel Pa. at Philadelphia	8 00	8 50
Youghiogheny, Waverly Co., at Balt	4 25	5 65
Despard, West Va.	4 50	6 00
Murphy Run, West Va., at Baltimore	4 50	5 85
Fairmount, West Va., " "	4 40	5 70
Newburgh Orrel, Md. " "	4 50	6 00
Cannelton Cannel, W. Va.	....	10 00
" Splint, " at Richmond.	6 00	7 00
" Gas Coal at Richmond.	4 15	5 65
Peytona Cannel W. Va at Richmond	....	10 00

Manufacturing and Steam Coals.

Cumberland at Georgetown and Alexandria, Va	3 50@3 75	5 20
Cumberland, at Baltimore	3 65@3 80	5 45
Clearfield f.o.b. Canton, Baltimore	3 40@....	5 00

Pennsylvania Semi-Bituminous Coal's

At the mines, per 2,000 lb., 90c. f.o.b. at Greenwich, Phila., for Eastern and Foreign shipments, per 2240 lb. $3 25@3 35 for Sound ports, 3 50@3 65, f.o.b., at South Amboy, N. J., per 2,240 lb., $4 10@4 60. Discharged, in New York, per 2,240 lb., $5 00 @5 20.

Foreign Gas Coals.

	Sterling.	Am. currency.
Newcastle, at Newcastle-on-Tyne	9/6@11/	6 50@7 00
Liverpool House Orrel, at Liverpool	26/	13 00
Ince Hall Cannel "	42/	18 00
" Gas Cannel "	28/	13@14
Scotch Gas Cannel, at Glasgow, nominal,	25/	7 50
	Gold.	
Block House, at Cow Bay, N. S	2 00	4 75
Caledonia, at Port Caledonia	1 50	4 25
Glace Bay, at Glace Bay	1 50	4 25
Lingan, at Lingan Bay	1 75	....
Sydney, International and Reserve mines, at Sydney	2 00	5 50
Picton, Albion & Vale mines, at Pictou.	2 25	5 75

Retail Prices in New York.

Anthracite.

Per 2000 lb.	Grate and Egg.	Stove. Chestnut
Pittston coal, in yard	$3 90	$4 20 $3 90
Lackawanna coal, in yard	3 90	4 20 3 90
Wilkes-Barre, delivered	5 00	5 30 4 60
Lehigh & Locust Mountain, del'd	5 50	5 50 5 00
Schuylkill Red Ash, del'd	5 25	5 50 4 75

The Cost of delivery for Pittston and Lackawanna coal ranges from 40 cts. to $1 10 per ton, according to distance from the yard.

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb	$18 00
Liverpool House Cannel " " "	.... 18 00
American " " "	.... 11 00
Cannelton Block, or splint, " " "	.... 10 00
American Orrel " " "	....11@14
Red Bank Cannel " " "	.... 10 00
Cumberland " " "	.... 7 00

Baltimore, Md. Jan. 10, 1877.

Specially Reported by MESSRS. E. STABLER & CO.

ANTHRACITE.

Wholesale or Trade Prices per 2240 lb.

Wilkes-Barre "Boston" Vein, and Plymouth White Ash.

In cars at depot.		In cars at depot.	
Lump	$3 85	Egg	$4 10
Steamboat	4 10	Stove	4 60
Broken	4 10	Nut	4 10

Shamokin, red or white ash.

Egg	4 30	Stove	4 60

Lykens Valley, red ash,

Egg and stove	5 35

From wharf or yard, wholesale, 50@75c. additional.
By retail, all kinds and sizes, per 2240 lb. $6 00@7 50

BITUMINOUS.

George's Creek, Cumberland f. o. b. at Locust Point	3 75@4 00
West Virginia Gas f. o. b. at Locust Point	4 50
Youghiogheny Gas, f. o. b. at Locust Point	4 50
Swanton	4 00

Boston, Mass. Jan. 6, 1877.

COAL is quiet, and prices are rather easier. Contrary to general expectation there was no general movement among the collieries to reduce wages on the 1st of the month. Nevertheless, shipments from the mines continue large, though the ice blockade leads to a temporary check in shipments from tidewater to Boston and other Eastern ports. The year opens with a very general feeling that, though prices may not go lower, they will not advance for some time to come. Freights are very strong, owing to the cold weather and freezing of harbors, but are more or less nominal. An important influence upon the price of coal is being exerted by the extremely low price of wood in the country. In most parts of New England it can be obtained for $3 per cord at retail. The season has been particularly favorable for getting it to market, owing to the snow.—*Commercial Bulletin.*

Buffalo, N. Y. Jan. 10, 1877.

Specially Reported by MESSRS. LEE & LOOMIS.

Deliv'red at	Elmira Afloat.	Ithaca. Afloat.	Syracuse Afloat.	Rochester. Afloat	Rochester. ret. del.	Oswego f.o.b.
Grate	$4 20	$3 45	$3 60	$4 30	$5 55	$4 55
Egg	4 20	3 55	3 70	4 40	5 65	4 65
Stove	4 60	4 05	4 20	4 90	6 15	5 15
Nut	4 60	4 05	4 20	4 90	6 15	5 15

Delivered at	Erie. f.o.b.	Buffalo. Afloat.	Buffalo. f.o.b.	Buffalo. ret. del.
Grate	$5 05	$4 55	$5 05	$5 80
Egg	5 15	4 65	5 15	5 90
Stove	5 65	5 15	5 65	6 40
Nut	5 65	5 15	5 65	6 40

Chicago, Ill. Jan. 9, 1877.

Specially reported by Messrs. RENO & LITTLE.

Lackawanna Stove	$8 00	Erie and Brier Hill	$6 00
" Chestnut	7 75	Wilmington & Ill.	3 50@4 25
" Grate & Egg,	7 50	Blossburgh	7 00

Cincinnati, O. Jan. 9, 1877.

Specially Reported by Messrs. A. BUCHANAN & CO.

On account of the river being closed at this point there is no coal being sold at wholesale. There is LO Kanawha coal in the market.

Per ton of 2000 lb.	Bush.	Ton.
Youghiegheny, or Pittsburgh, afloat	@7c.	—
Pomeroy coal "	@5c.	—
Kanawha " "	7½c.	—
Ohio River Coal "	5½c.	—
Cannel coal, according to quality "	@16c.	—
The following are the retail prices delivered		
Youghiogheny	—	$3 00
Pomeroy	—	2 50
Cannel	18@22c.	—
Kanawha	10c.	—
Anthracite, per ton		@$9 50
Coke, at yard	10c.	
Coke, hard and soft, delivered	— @9c.	—

Cleveland, O. Jan. 9, 1877.

Specially reported by Messrs. LAMBIE & BATES.

The following are the prices established by the Coal Exchange until further notice:

Per ton of 2000 lb. f. o. b. vessels.

WHOLESALE.

	1 to 10 tons.	10 tons upw'd.
Brier Hill lump	$4 25	$4 00
" " nut	3 75	3 50
Massillon and Mineral Ridge lump	4 00	3 75
" " " nut	3 75	3 50
Straitsville Lower Vein, Hocking & Shawnee, Pp.	3 60	3 35
" " " nut	3 40	3 15
Del Carbo lump	3 75	3 50
" " nut	3 50	3 25
Rich Hill lump	3 50	3 35
" " nut	3 25	3 00
Columbiana, lump	3 25	3 00
" nut	2 75	2 50
Lacka'a., Wilkesbarre and Pittston egg and grate,	7 00	6 75
" " " stove	7 50	7 25
" " " chestnut	7 25	7 00

Lehigh to be $1 25 per ton higher.

All sales to be strictly cash with order or C. O. D.

Indianapolis, Ind. Jan. 9, 1877.

Specially reported by Messrs. COBB & BRANHAM.

Wholesale on board cars, and retail delivered to consumers.

Per ton of 2000 lb., bushel of 70 lb.

BITUMINOUS.

White River, per ton	$2 75
Brazil Block, "	2 75
High'and, grate, "	2 50
Block coal, nut, per car	18 00
Highland " "	18 00
Block Slack "	17 00
Peytona cannel, per ton	$5 75
Indiana Cannel	4 50
Hocking Valley	4 25
Youghiogheny	4 50
Blossburg (smithing)	6 50
Piedmont "	6 50
Gas coke, per bushel	10

ANTHRACITE (Lackawanna and Wilkes-Barre.)

Broken	$6 70
Egg	6 70
Nut	$6 70
Stove	6 70

Lehigh Anthracite.

Broken	$7 60
Egg	7 60
Nut	$7 30
Stove	7 70

Retail, per bushel, delivered.

Sand Creek	15c.	Block Nut, steam	15c.
White River	13	" Slack, "	7
Brazil Block	13	Peytona Cannel	—
Highland grate	12	Virginia "	27
Block Nut, domestic use.	11	Youghiogheny	16
Highland Nut, " "	11	Blossburg	26
" " steam	8	Piedmont	26

GAS COKE (measured.)

Crushed 14c.	Lump 12c.

ANTHRACITE,

Wilkes-Barre and Lackawanna (all sizes)	$7 50 per ton.
Lehigh, retail	8 50 per ton.

Louisville, Ky. Jan. 9, 1877.

Specially reported by Messrs. BYRNE & SPEED.

WHOLESALE.

per bushel		per bushel	
Pittsburg	6¼c.	Pine Hill	—
Raymond City	6½c.	Kentucky	7c.

RETAIL.

per bushel		per bushel	
Pittsburgh	10c.	Peytona Cannel	18c.
Raymond City	10c.	Buckeye "	
Pine Hill	13c.	City-made Coke	8c.
Kentucky	9c.	Anth., per ton,	$10 00 to 10 50
Screened Pittsburgh per load			$3 50
Screened Raymond City			2 50
Pine Hill (Kentucky)			2 25
Cannel			4 50
City-made Coke			4 00

Milwaukee, Wis. Jan. 9, 1877.

Specially reported by Messrs. R. P. ELMORE & CO.

Retail price per ton of 2000 lb.

Lehigh Lump	$8 00	Briar Hill, select	$7 00
Lehigh Prepared	9 00	Blossburgh	7 00
Lackawanna (all sizes)	8 00	Cannel	6 00
Pittston	8 00	Pittsburgh	6 50
Scranton	8 00	Oak Hill	6 00
		Steam coal	4@5 00

New Orleans, La. Jan. 8, 1876.

Specially Reported by Messrs. C. A. MILTENBERGER & CO.

Pittsburg coal, wholesale, by boat-load, per bbl	50c.
" steamboats, per bbl	60c.
" to manufacturers, per bbl	65c.
" to families	75c.
" shipments, per hhd	$6 50
Anthracite, wholesale, per ton	7@8 00
" retail, "	11 00
Virginia Cannel, retail, per bbl	1 25
Scotch " "	....
Mt. Carbon, wholesale, per bbl	....
" " retail, "	....
St. Bernard wholesale, per bbl	—c.
" steamboat	50c.
" retail, "	70c.

Pittston, Pa. Jan. 9, 1877.

Pennsylvania Coal Company's Coal in yard, ton of 2000 lb.

Retail.

Lump, Egg and Stove	$3 25
Chestnut	3 00
Pea	1 00

Delivered, fifty cents per ton additional.

Richmond, Va. Jan. 9, 1877.

Specially reported by S. H. HAWES, Dealer in Coal.

Per ton of 2240 lb., f.o.b.

Kanawha Cannel	$9 00	New River Bituminous,	$4 40
Coalburgh Splint	5 70	Clover Hill Coal	3 50
Lewiston "	5 70	James River Bitum	3 30
Kanawha Gas coal	4 90	" " Carbonite,	5 00

San Francisco, Cal.

From the *Commercial Herald*, Jan. 4, 1877.

COAL—Imports from Jan. 1st to Dec. 16th :

	tons.		tons.
Anthracite	11,711	Vancouver Island	93,743
Australian	129,087	Rocky Mountain	174
Coos Bay	39,491	Seattle	90,444
Cumberland	12,520	Bellingham Bay	20,835
English	119,396	Chili	3 150
Mt. Diablo 10 mos	101,733		

The closing week of the year is not usually fruitful in business, nor is the present winter any exception to the rule. Stocks are large and free, and spot cargoes of steam both low and nominal. Seattle supplies, as well as those from Nanaimo, continue liberal, finding ready sale Inquiries continue to be made for next spring arrivals, and for these better prices rule than for spot cargoes, as the long continued drought is not encouraging to ship owners to send vessels to this coast next season, which circumstances portends a lessened supply in 1877. Jobbing price of Lehigh from yard is $16 : Cumberland in bulk $17. The arrivals of Coal from Seattle, Nanaimo, Wellington, Coos Bay, and Bellingham Bay are liberal : yet they all, with the California Mt. Diablo mines, are seriously affected by the prevailing low prices. As an approximation to the present current cargo rates we submit the following : Spot price of Cumberland ex ship $15@16 in bulk, $17 in casks: Lehigh, $14@15 : Pittston, $14@14 50 for Egg; Sydney Steam, $7 50 : Wallsend $8@8 25 : West Hartley, $8 50@9; Mt. Diablo, fine $5 75, coarse $7 75; Coos Bay, $8; Seattle, $9; Bellingham Bay, $8.

St. Louis, Mo. Jan. 9, 1877.

Reported by JAS. J. SYLVESTER, Secretary of the Anthracite Coal Association.

Retail prices, delivered. Ton of 2,000 lb.

ANTHRACITE.	per ton.		
Lackawanna	$9 00@10 00	Schuylkill	9 00@10 00
Wilkes-Barre	9 00@10 00	Lehigh	10 00@10 50
BITUMINOUS.			
Blossburg	9 00	Big Meadow	3 00
Pittsburg	4 50	Illinois Coals	2 50@3 00
Indiana Block	4 00	Connellsville Coke	8 50

Toledo, Ohio. Jan. 9, 1877.

Specially reported by Messrs. GOSLINE & BARBOUR.

We quote as follows for retail delivery :

Ton of 2,000 lb.

Lackawanna lump	$6 75	Lehigh lump	$7 75
" egg	6 75	" egg	7 75
" stove	7 00	" stove	8 00
" chestnut	6 75	" chestnut	7 75
Soft Coal.			
Hocking lump	4 00	Brier Hill	5 75
" nut	4 00	Blossburg	8 00
Willow Bank lump	4 50	Cumberland	8 00
" " nut	4 00		

Rates of Transportation on Anthracite Coal to Tide Ports.

PHILADELPHIA AND READING RAILROAD CO.
General Office, 227 South Fourth Street.
PHILADELPHIA, Dec. 18, 1876.

From and after this date, and until further notice, shipments of anthracite coal can be made through by rail to South Amboy, via Richmond Junction, at the following rates, per ton of 2,240 pounds, in company's car :

From Schuylkill Haven	$1 52
" Tamaqua	1 67
" Pine Grove	1 72
" Port Richmond	65

An additional charge of twenty-five cents per ton will be made on chestnut and pea coal, unless the shipper signs the usual release.

The release now in force will apply to this trade.

(By order of the Board of Managers),
DAVID DROWN, Secretary.

Lehigh and Wyoming Coals.

per ton of 2240 lb

	From Penn Haven.	From Mauch Chunk.	From Hazleton*‡	From Upper Lehigh.	From Ashley and Sugar Notch.
To ‡ Newark, N. J. (117 miles), via Central Railroad of New Jersey	1 62	1 48	2 04	1 95	2 18
‡ Mauch Chunk, Pa., via Central Railroad of N. J.	14	...	58	49	72
‡ Philipsburg, N. J., (46 miles)	60	46	1 00	91	1 14
Elizabethp't, (114 m) Pt. Johns., Hoboken & South Amboy, N. J., shipping and wharfage 35c. add.	1 26	1 12	1 68	1 59	1 82
High Bridge, N. J.	1 95	1 75	2 43	2 34	2 52
Elizabeth, Crauford, Westfield & Elizabethport, for consumption, Jersey City, N. J., (121 miles) and New York, via L. V. RR	1 89	1 75	2 31	2 22	2 45
	1 59	1 47	2 01	1 92	2 15

From *Mauch Chunk* to *New York* (121 miles). (towing limits) and Jersey City† via Lehigh Valley RR. $1 47

From *Mauch Chunk* to *Philadelphia* (93 m.) via L. V. and L. and S. RR. and North Penn. RR 1 25

For way points between *Mauch Chunk* and *Phillipsburg*, on the New Jersey Railroads 1 00

From *Phillipsburg, N. J.* to *Hoboken* (84 m.) for shipment via Delaware Lackawanna and Western RR., Morris and Essex Division 65

From *Phillipsburg, N. J.*, to *Newark* (75 m.) via Delaware, Lackawanna and Western RR. 1 01

** Rates on line coal from Hazleton are 10c. per ton above these figures.

‡ The cost of unloading is to be added to these rates. No charge less than 40c. per ton will be made for any distance. Tolls from Mauch Chunk to Phillipsburg for way points will be $1 15 per ton.

† Transportation on Coal destined for re-shipment from this point from boat to boat is 20c. less, if discharged upon the wharf 10c. less than the above rate.

The distances in the above table are Computed from *Mauch Chunk*. From *Ashley* to *Mauch Chunk* the distance is 51 miles, and from *upper Lehigh*, 33 miles. From *Hazleton* 24 miles, and from *Penn Haven* 8 miles.

From *Wilkes-Barre* to *Perth Amboy* via the Lehigh Valley Railroad Company, the distance is 101 miles, and from *Mauch Chunk* it amounts to 106 miles.

Geneva, Ithaca and Sayre Railroad.—The rates of transportation on coal from Coxton, Pa., per ton of 2,240 lb., from and after the first of November, will be as follows :

To East Waverly, N. Y.	$1 75
" Ithaca, and for C. Lake RR. (local)	1 64
" " for C. Lake RR. and via Erie Canal (shipment)	1 57
" To Van Etten, for U. I. and E. RR	1 61
"Geneva (local) for S. P. and S. and L. O. S. Railroads, and for N. Y. C. and H. R. RR, except Auburn and Cayuga	2 06
To Geneva, for Buffalo and Towanda	1 87
" " " Rochester and Charlotte	2 01
" " " Auburn and Cayuga	2 50
Total rate to Buffalo	3 11
" " " Rochester	2 78

REGULATIONS.

A charge of fifteen cents per ton will be collected of each consignee on all coal not unloaded within twenty-four hours after its arrival, and an additional charge of ten cents per ton for every twenty-four thereafter; Sundays and legal holidays excepted.

No allowance will be made for coal lost from cars on account of broken doors or other defects existing when the cars are loaded.

Seventeen cents per ton will be charged, at Ithaca Docks, for shipping Coal direct from cars to vessels, and 12 cents per ton additional from stock, making a total charge on what is shipped from stock of 29 cents per ton.

All freights will be collected weekly, by drafts on shippers, from Coxton to destination.

Freights

Representing the latest actual charters up to Jan. 11, 1877.
Per Ton of 2240 lb.

PORTS.	From Philadelphia.	From Baltimore.	From Georgetown.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me	....	....	....	....
Albany	....	....	....	....
Alexandria	....	....	....	....
Amesbury, Mass	....	....	....	....
Bangor, Me	....	....	....	....
Bath, Me	...	2 00	....	....
Baltimore	....	....	....	....
Boston, Mass	....	2 50	....	2@2 50
Bridgeport, Ct	....	2 00	....	....
Bristol, R. I.	....	....	....	....
Cambridgeport, Mass.	....	....	....	....
Derby	....	....	....	....
Dighton	....	....	....	....
East Cambridge	....	....	....	....
Fall River	....	2 00	....	....
Hackensack	....	....	....	....
Hallowell, Me	....	....	....	....
Hartford	....	..	....	....
Hoboken	....	....	....	35
Hudson	....	....	....	....
Jersey City	....	....	....	35
Lynn, Mass	....	..	....	....
Middletown	....	....	....	....
Mystic	....	....	....	....
Newark	....	....	....	....
New Bedford	....	2 00	....	....
Newburyport	....	2 75	....	....
New Haven	....	2 00	....	8@90
New London	....	2 00	....	....
Newport	....	....	....	....
New York	....	1 80	....	35
Norfolk	....	...	....	....
Norwalk	....	....	....	....
Norwich	....	....	....	....
Pawtucket	....	....	....	....
Philadelphia	....	....	....	....
Portland	....	....	....	....
Portsmouth, N. H.	....	2 75	....	....
Providence	....	2 00	....	1@1 50
Poughkeepsie, N. Y.	....	....	....	....
Rockport	....	....	....	....
Saco	....	....	....	....
Sag Harbor	....	....	....	....
Salem, Mass	....	2 60	....	....
Salisbury Pt., Mass.	....	....	....	....
Stamford	....	....	....	....
Stonington	....	....	....	....
Taunton	....	....	....	....
Troy	....	....	....	....
Warren, R. I.	....	....	....	....
Wareham	....	....	....	....
Washington	....	....	....	....
Weymouth	...	....	....	....
Wilmington, Del	....	....	....	....

* And discharging and towing. † And discharging. ‡ And towing. § 30. per bridge extra.

IRON MARKET REVIEW.

New York.

FRIDAY EVENING, Jan. 12, 1877.

American Pig.—This article stands about as it has for several weeks. In some quarters there is a little better feeling and intimations of business done with particulars withheld, while in others the same d pressing reports are given. We only note a sale of 1,000 tons of forge on private terms, and continue to quote No. 1 foundry at $21 ; No. 2, $19@$20 ; and forge, $19.

Scotch Pig.—There is but little doing in this article, and sales are only in a small way. We quote Coltness at $28.50; Eglinton, $25.50@$26 ; and Glengarnock, $26.75@$27.

Rails.—The favorable indications of business to be done in rails continue, although only in the form of negotiations. We note sales of 1,000 tons of iron rails, and 1,500 tons 40 lb. steel, both on private terms. Prices continue unchanged, although there is considerable competition for early delivery. We quote iron rails at mills at $34@$36, and steel $48@$54.

Old Rails.—There has been no recent business reported in these. We continue to quote nominally at $19@$20.

Scrap.—1,000 tons are reported to have been sold on private terms. We quote $25 50@$26.

Baltimore, Md. Jan. 10, 1877.

Specially reported by Messrs R. C. HOFFMAN & CO.

The iron market is unchanged, and last quotations continue as follows :

Baltimore Charcoal	$29@32	Mottled and White	16@17 00
Virginia Charcoal	28@32	CharcoalC R. Blooms	60@62 50
Anthracite No. 1	22@23	" " Belletts	65@67 50
" No. 2	20@21	Refined Blooms	50@55 00
Anthracite No. 3	$19@20 00		

Boston, Mass. [Jan. 6, 1877.

PIG continues to tend downward, with the supply steadily on the increase. No new blast furnaces are being blown in, but the receipts from those already in blast are more than sufficient for the demand. We quote No 1 $21 50@22 and gray forge $18 50@19. Scotch pig is dull, partly on account of the decline in gold.

BAR is very quiet, and may be quoted at $47@48 for refined and $38@39 for common. Considerable stir has been created in New York by the discovery of the fact that large quantities of new hoop iron have been imported as scrap, and at a lower tariff rate. The valuation was given at £6 instead of £9 per ton. A shipment of 681 bundles has been seized.—*Commercial Bulletin.*

Chattanooga, Tenn. Jan. 9, 1877.

Specially reported by J. F. JAMES. pig iron broker, etc., 233 Market Street.

Prices remain unchanged.

Tenn. Ala. and Ga. Charcoal, No. 1 foundry	$20@ 21
" " " " No. 2 foundry	18@ 19
" " " " gray forge	16@ 17
" and Georgia coke, No. 1 foundry	18@ 19
" " " No. 2 foundry	17@ 18
" " gray forge	15@ 16
White and Mottled	14@ 15
Tennessee and Georgia cold-blast car wheel	21@ 25
" " gray forge	16@ 18
Old Rails	cash 19@ 20
Cast Scrap	" 10
Wrought Scrap, No. 1	" 18@ —
" " " 2	" 12@ —

Cincinnati, Ohio. Jan. 9, 1877.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

We have no change to report in our pig iron market ; prices remain about the same. We quote :

CHARCOAL.		
Hanging Rock, No. 1 Foundry	$24 00@25 00	—4 mos
" No 2, "	23 00@	—4 mos
" Mill	21 00@22 00	—4 mos
" Soft Silver Gray	22 00@	—4 mos
Tennessee, No. 1, Foundry	24 00@	—4 mos
Tennessee, No. 2, "	23 00@	—4 mos
" Mill	21 00@22 00	—4 mos
Missouri, No. 1, Foundry	@	—4 mos
STONE COAL.		
Ohio, No. 1, Foundry	22 50@	—4 mos
" No. 2, "	21 50@	—4 mos
Ohio Mill	20 00@21 00	—4 mos
Missouri, No. 1 Foundry	24 00@25 00	—4 mos
" No. 2, "	23 00@	—4 mos
" Mill	21 00@22 00	—4 mos
CAR-WHEEL.		
Hanging Rock, C. B	40 00@45 00	—4 mos
Tennessee "	25 00@32 00	—4 mos
Missouri "	30 00@33 00	—4 mos
Alabama "	25 00@32 00	—4 mos
BLOOMS.		
Charcoal	55 00@ 65 00	—cash
SCRAP IRON.		
Cast	50c.@ 85	—cash
Wrought	1 00@1 40	—cash

Cleveland, Ohio. Jan. 9, 1877.

Specially reported by Messrs. C. E. BINGHAM & CO.

Per gross ton, on four months' time. Subject to change in market. Discount for cash 4 per cent.

FOUNDRY IRON.	
No. 1, Lake Superior Charcoal	26 50@....
No. 2, " "	26 00@....
No. 1, Anthracite	24 50@....
No. 2, "	22 50@....
No. 1, Bituminous	24 50@....
No. 2, "	22 50@....
American Scotch, No. 1, Cherry Valley	.... @....
" " B—1, " "	.... @....
" " No. 2, " "	.... @....

No. 1, Massillon..... 24 50@....
B—1, " ..... 23 00@....
No. 2, " ..... 21 00@....

CAR WHEEL AND MALLEABLE IRON.

No. 3 Lake Superior Charcoal..... 26 50@....
No. 4 " " " ..... 27 00@....
Nos. 5 and 6 " ..... 26 50@....

BESSEMER IRON.

Nos. 1 and 2 Lake Superior Charcoal..... 26 50@....

FORGE IRON.

No. 1, Gray..... 22 00@....
White and Mottled..... 24 00@....

Louisville, Ky. Jan. 9, 1877.

Specially reported by Messrs. GEORGE H. HULL & Co.

The market continues without change either in price or tone. The stocks of all grades of hot blast in this market and at the furnaces tributary thereto, are small, and any considerable demand during the next four months must necessarily stiffen prices. The stocks of car wheel iron are ample to meet all prospective demands.

The usual time, four months, allowed on quotations below.

HOT BLAST—CHARCOAL.

No. 1 Foundry, from Hanging Rock Ores..... $24 00@25 00
No. 2 " " " ..... 22 00@23 00
No. 1, Mill, from " " ..... 20 00@21 00
No. 1. Foundry, from Alabama, Georgia and Tennessee ores ..... 22 00@23 00
No. 2, Foundry, from Ala., Geor'a and Tenn. ores 21 00@22 00
No. 1, Mill, from " " " " " 20 00@21 00

HOT BLAST—STONE COAL AND COKE.

No. 1, Foundry, from Hanging Rock Ores..... 22 00@23 00
No. 2, " " " " ..... 20 00@21 00
No. 1, Mill, " " " " ..... 20 00@21 00
No. 1, Foundry, from Ala. Ga. and Tenn. Ores. 21 00@22 00
No. 2, " " " " ..... 20 00@21 00
No. 1, Mill, " " " " ..... 20 00@21 00
No. 1 Foundry, from Missouri Ores..... —— @ ——
No. 2 " " " " ..... —— @ ——
No. 1 Mill, from Missouri Ores ..... 23 00@25 00

COLD BLAST—CHARCOAL.

Car Wheel from Hanging Rock Ores..... 35 00@43 00
" " Tennessee " ..... 26 00@28 00
" " Alabama and Georgia Ores..... 28 00@40 00
" " Kentucky Ores..... 28 00@42 00

Milwaukee, Wis. Jan. 9, 1877.

Specially reported by Messrs. R. P. ELMORE & Co.

Pig iron trade is slow, no change worthy of note either in price or sales.

Lake Superior No. 1 Charcoal..... $26 00
" " " 2 " 25 00
Lake Superior No. 1 Anthracite..... 25 00
" " " 2 " 24 00

Philadelphia, Pa.

(Weekly report of the Philadelphia Iron Market, furnished by Messrs. JUSTICE, COX, Jr., & Co., Iron Merchants, 333 Walnut Street, Philadelphia. Week ending Jan. 11, 1877.)

PIG IRON.—The general condition of the trade is one of depression. The promised orders and good times to come after the new year set in, have not as yet made an appearance, in fact less business has been done since the new year came in than in the same number of days in December. Prices are neither weak nor strong. Any large orders coming on to the market would undoubtedly stiffen prices, whilst if this dullness continues, prices will just as surely fall off. The demand for mill iron continues with a scarce supply. This comes from the fact that all furnacemen aim to make foundry iron, as that is the only branch of the furnace business that has any profit in it. We quote No. 1 at $21 to $21.50; No. 2 at $19 to $20; forge, $18 to $20 as to brand.

MANUFACTURED IRON, as with pig, continues dull and depressed. The fact of an order for 4,000 axles having been taken by a mill in this neighborhood, is hoped will give tone to that branch of the trade. The orders for tank and skelp have fallen off, whilst bars are about as dull as they well can be. We quote bars 2.10 to 2.25: tank, 2⅞ to 7 cents per lb. or to quality; skelp, 2¼ to 2⅛ cents per lb.

RAILS.—Steel rails continue dull at quotations. The inquiry for iron rails is good, but the offers of half cash and half bonds make the orders hard to place. We quote $50 to $52 for steel; $36 to $40 for iron.

OLD RAILS.—We continue to quote at $21 to $22.

SCRAP.—Wrought at $24 to $26; cast, $14 to $19.

Richmond, Va. Jan. 8, 1877.

Specially reported by ASA SNYDER, Esq.

The pig iron market continues without animation. The rigorous season—political distraction only aggravates the usual dullness of this period. No change in quotations.

Virginia Cold Blast Charcoal Pig Iron..... $27 to $33
" Warm " " " " " ..... 24 to 28
" " " Coke " " 1 X..... 23 to 24
" " " " " " 2 X..... 21 to 22
" " " " " " 3 ..... 20 to 21
" Anthracite 1 X..... — to —
" " 2 X..... — to —
" " 3 ..... — to —

San Francisco, Cal.

From the *Commercial Herald*, Jan. 4, 1877.

The last steamer for Panama carried 500,000 lbs. Pig Lead enroute for New York. Stocks at the close of the year are for the most part fully equal to trade wants. The stock of Pig Iron at date is computed at upward of 15,000 tons of all kinds, in first and second-hands. Of this 7,000 tons are held by importers, the bulk of which is Scotch. Closing quotations, $30@34 for all kinds.

METALS.

NEW YORK, FRIDAY EVENING, Jan. 12, 1877.

There is a better business doing in metals but as purchases are made in a hand-to-mouth way they do not attract much attention or improve prices.

Gold Coin.—During the week under review gold has ranged from 106⅛ to 105¾, and closed at 106⅜.

Bullion.—The market for silver is firm but quiet—not much doing abroad or here. The receipts are light as usual at this season of the year. The diminished production of the Nevada mines is having considerable influence in keeping the market steady. The quotations are as follows: In this city, $1.23¾@$1.24; in London, 57⅛@57¼d.; and in San Francisco 8 per cent. discount. Fine gold bar is quoted at par—$20.67 gold per oz.

Copper.—The sales of this article have amounted to about 200,000 lb. at 19¼@19⅝c. London quoted on the 5th inst as follows: Chili bars, £75, and Best Selected, £83.

Tin.—There is a moderate business being done in this article. Straits is quoted in London at £75 10/@£76 with an upward inclination. We quote here in gold, as follows: Straits, and Refined, 17¼@17⅝c.; L. & F., 17c.; and Banca, 19⅛c.@19¼c. A fear that gold will still further decline has brought about an anxiety to realize on tin and upon large lots, our quotations could undoubtedly be shaded.

Tin Plates.—A moderate business is being done in these in a jobbing way at the following quotations, gold, per box: Charcoal tins, $6.75@$7, and ternes, $6 25@$6 50; coke tins, $6, and ternes, $5.62½.

MESSRS. ROBERT CROOKS & Co., of Liverpool under date of Dec. 28, 1876, say of Tin Plates:—"Business put through this week is almost nominal, and consequently there is little to add to last report. Hematite Pig continues firm at an advance of 10s. per ton over lowest figures, and this puts a strong obstacle in the way of makers reverting to their bottom quotations. Notwithstanding, this is what they must soon come to if market does not improve, as many of them are not strong enough, financially, to let their works be idle."

Lead.—We are reported sales of about 200 tons ordinary domestic lead at 6¼c. currency. The demand is only for small lots.

Spelter and Zinc.—There is but little demand for domestic spelter which is quoted at 6¼@6½c., currency, according to brand. Sheet zinc is quoted at 8¼c., currency, with a fair business doing at this price.

Antimony is quoted at 13c@13¼c. gold.

Quicksilver.—There has been no change in the prices of this article. The quotations are as follows: London £8 5/ per flask; New York, 53@54c. gold per lb. and San Francisco, 50c. The Quicksilver Mining Company's production for December was 2,500 flasks.

The San Francisco *Commercial Herald* of Jan. 4, says of Quicksilver:—As stated in our last issue, the combination have extended their time of duration until March 1, agreeing not to sell under 50c. net cash. At date the demand is light, with steadily increasing stocks. The steamship *City of San Francisco*, hence for Panama, carried, en route for Callao, 271 flasks. The closing price of the year in London was £8; but since advanced to £8 5s, as we learn by cable. The *City of Peking* for Hongkong carried about 700 flasks.

FINANCIAL.

New York Stocks.

NEW YORK, FRIDAY EVENING, Jan. 12, 1877.

The total sales on this market during the past week will scarcely reach 59,000 shares. The fluctuations have been unimportant the majority of the quotations closing lower. The stock of the New Jersey Central Railroad closes at 35⅛, being 1⅝ per cent. below the price of a week ago. Sales amount to 14,000 shares. The Delaware, Lackawanna and Western Railroad stock has advanced to 76⅛, with transactions amounting to 41,000 shares for the week.

Pennsylvania Coal Company.—We note small transactions in this stock on the Board to-day at $220 per share.

Cleveland and Coshocton Railroad.—A company proposes to construct a narrow-gauge railroad from Cleveland to the coal-fields of Medina, Homes, Coshocton and further south, running most of the way through the valley of the Styx—said to be a natural railroad route. If the right of way and $300,000 are secured, it will build and fully equip the line from Cleveland to Coshocton the coming season.—*Cleveland, O., Herald.*

Peoria and Rock Island Railroad.—The *Chicago Tribune* says: "Judge Drummond was occupied in settling the decree of foreclosure in the case of V. G. Thomas, *et al.* Trustees, against the Peoria and Rock Island Railroad Company, and in hearing the cross bill of the Coal Valley Mining Company. The mining company claimed to have a contract for the use of the railroad from Coal Valley to Rock Island, and the judge decided the claim was valid. The decree of foreclosure of the road was granted, but the terms cannot be decided on for a few days. The sale will take place about the middle of February, 1877. The road is ninety-one miles long, and the incumbrances on it, including interest, amount to nearly $2,000,000."

Union Coal Company.—We note a recent auction sale of $8,000 of the 1st mortgage, 7 per cent. bonds of this company due in 1887, guaranteed by the Delaware and Hudson Canal Company, accrued interest to be charged at 100 per cent.

Central Railroad of Iowa.—Owing to increased coal traffic on this road, two new billing stations have been opened at Muchakinock and Coalfield.

Pittsburg and Castle Shannon Railroad.—At a meeting of stockholders held in Pittsburgh, Dec. 21, it was voted to authorize an issue of $150,000 new 7 per cent. bonds. The company's road is six miles long and it owns also a large coal property; its bonded debt by the last report was $237,000.

Quotations and Sales of Stocks and Bonds.

For the week ending Jan. 12, 1877.

STOCKS.

	Highest	Lowest	Closing	Shares sold.
Pennsylvania Coal Co	—	—	220	5
Consolidation Coal Co	38	38	36	10
Spring Mt. Coal Co.....	—	—	†00	—
American Coal Co.....	—	—	*54	—
Maryland Coal Co.....	—	—	9	—
Del, Lack., and West. RR. Co.....	76¾	74⅝	76⅛	41,376
New Jersey Central RR. Co.....	36⅞	35¼	35⅛	14,172
Delaware and Hudson Canal Co...	73	71¼	71⅛	1,318
Quicksilver Mining Co. pref'd.....	21⅞	21	21	300
" " " Common..	15	14¾	15	450
Mariposa Land & Min. Co. pref'd...	7⅝	6¾	7	600
St. Louis & Iron Mountain RR....	12⅛	12	11	300
Total Shares sold...				53,531
Sales for the week previous				95,014
Decrease				36,483

*Nominal. † Asked.

BONDS.

	Inter'st	Sales.	Price.
Del., Lack. & West. 2d M.....	M. & S.	3,000	108⅛@109
" " " 7's Con'ble	J. & D.	....	.... @106¼
Cent'l RR. of N.J., 1st M., New	F. & A.	9,000	111 @111¾
" " " 1st Cons..	.....	2,000	.... @ 85
" " " Convert'le	M. & N.	3,000	.... @ 83
Lehigh & W.-B'e, Con. Guar'd.	.....	2,000	.... @ 64
Am. Dock & Imp. Mt. Bonds..	J. & J.	1,000	.... @ 72¼
Del. & Hud. Can., 1st M., 1891	.....	3,000	.... @101
" " " 1884	.....	3,000	.... @101
" " " 1877	.....	....	.... @101½
" " " Coup. 7's, 1894	.....	....	.... @ 98
" " " Reg'd 7's, 1894	.....	.....	.... @ ....
St. L. & Iron Mountain, 1st M	F. & A.	14,000	.... @102¼
" " " 2d M	M. & N	.....	.... @ 70
Chesapeake & Ohio 6's, 1st M..	.....	....	.... @ 26
" " Ex. Coupon	.....	.....	.... @ 20
Mariposa Gold Loan con. 7s....	.....	.....	.... @100⅝
Total sales.....		$40,000	

Closing quotations, in the absence of sales, represent the latest prices bid.

Philadelphia Stocks.

PHILADELPHIA, Thursday Evening, Jan. 11, 1877.

The quotations in this market have been barely maintained during the week just closed, the list, with a single exception, showing a fractional decline. The total sales aggregate 83,000 shares, of which about 51,000 shares were of Reading, at from 18¾ to 19⅝, closing ⅛ below the higher figure. The stock of the Pennsylvania Railroad has been very steady, the extreme prices being 48¾@48⅞, closing at the lower figure, with sales of nearly 22,000 shares. Bonds have been moderately firm, the transactions amounting to about $80,000.

At the annual meeting of the Reading RR. Co., held held on the 8th instant, the following resolutions were adopted:

Resolved. That the issue of the Ten Million Income Mortgage Loan, referred to in the report of the Managers, be approved, and that the proceeds of such loan, if, in the opinion of the Managers, the same, or any part therof, should be sold, shall be exclusively applied to the liquidation of the floating debt.

Resolved. That the means already taken and suggested in the report or the funding or liquidation of the floating debt of the Company be and the same are hereby approved, and that for this, as well as for all purposes, the powers and authorities previously conferred upon the Board of Managers by resolutions passed at prior annual meetings be and the same are hereby continued.

Resolved. That a list of the stockholders of the Company be prepared semi-annually, every January and July, to be kept at the office of the Company, in Philadelphia, for the inspection of the Stockholders.

Westmoreland Coal Company.—40 shares of this stock were sold at auction during the week at $80 per share.

Williams Marble and Slate Company.—We note a recent auction sales of 10 shares of the stock of this company at $11 per share.

Tremont Coal Company.—$10,500 of the 1st mortgage 7 per cent. bonds of this company were sold at auction during the week at 90 per cent.

North Pennsylvania Railroad Company.—At the annual meeting of this company on the 8th inst. the total receipts for the year were shown to have been $1,675,-865.91, and the expenses $889,346.78. During the year two dividends of 3 per cent. each have been declared.

Pennsylvania and New York Canal and Railroad Company.—The report of the President of this company was read at its annual meeting on the 8th inst., and showed the gross receipts to have been for the past year, $1,678,254.34. This shows an increase in the earnings over 1875 of $197,213.47. There has been paid off during the year $20,000 for interest on bonds, leaving $398,-109.08 applicable for taxes, dividends, etc

MINING STOCKS.

AMERICAN MINING AND STOCK EXCHANGE.

Name of Company.	Location.	Feet on Vein.	Capital Stock.	a No. of Shares.	Total Assessments Levied.	Date and Amount of Last Assessment per share.	Total Dividends paid.	Date and Amount of Last Dividend per share.	Closing Quotations g American Currency. Sat.	Mon.	Tues.	Wed.	Thurs.	Fri.	Shares sold during the week.
Alpha Cons. G. S.	Nevada,	300	$ 3,000,000	30,000	$180,000	Aug. 12, '75, $1.	....	.....	$20 87½	....	$17 87½	$	$15 75	$18 50	1,150
Belcher, G. S.	Nevada,	1,040	10,400,000	104,000	662,400	April 14, '71, $4.	$15,397,200	April 10, '76, $1.	11 12½	$12 37½	10 75	12 50	10 00	10 00	3,000
Bertha Gold Co.	Virgi'a.	645 acs.	300,000	30,000	**	.....	....	.....	7 50	6 62½	6 75½	7 00	7 12½	7 12½	8,000
Best and Belcher, G. S.	Nevada,	545	10,080 000	100,800	136,192	July 13, '74, 50c.	....	.....	41 00	....	41 75	....	40 00	38 50	1,050
Bullion, G. S.	Nevada	943⅛	10,000,00:	100,000	2,052,000	Sept. 22, '76, $2.50.	....	.....	17 50	....	....	....	10 87½	11 00	650
Caledonia, G. S.	Nevada,	2,188	10,000,000	100,000	1,210,000	Aug. 28, '76, $1.00.	....	.....	....	....	....	....	....	....	.....
California, G. S.	Nevada,	600	54,000,000	540,000	....	.....	8,640,000	Dec. 15, '76, $2.	43 50	45 00	45 75	47 00	46 00	46 00	300
Centennial, G.	Califor.	66 acres	1,000,000	100,000b	....	.....	....	.....	....	....	....	....	....	....	....
Chollar Potosi, G. S.	Nevada,	1,400	2,800,000	28,000	1,282,020	June 26, '76, $5.	3,080,000	Feb. 10, '72, $1.	86 00	89 50	....	*89 00	76 50	....	200
Cleveland, G.	Colo.	3,715	250,000	25,000b	**	.....	....	.....	9 75	9 75	9 75	9 75	9 87½	9 75	1,500
Cons. Hercules & Roe, S	Colo.	16,500	1,000,000	100,000	**	.....	120,000	.....	....	....	....	....	....	....	.....
Cons. Imperial, G. S.	Nevada,	468	50,000,000	500,000	125 000	July 25, '76, 25c.	....	.....	1 87½	1 87½	2 12½	*2 50	1 50	....	3,400
Con N. Slope & E.C.T.	Colo.	15,000	500,000	10,000	**	.....	....	.....	8 00	....	....	8 50	8 75	8 75	3,200
Cons. Virginia, G. S.	Nevada,	710	54,000,000	540'000	411,200	June 11, '73, $3.	25,920,000	Dec. 11, '76, $2.	40 00	....	....	39 50	41 50	40 00	170
Confidence, G. S.	Nevada,	130	2,496,020	24,960	243,840	March 18, '73, $1.	78,000	May 1, '65, $8.33⅓	9 75	....	....	....	....	....	100
Crown Point, G. S.	Nevada,	600	10,020,020	100,000	1,173,370	Oct. 26, '76, $1.	11,588,000	Jan. 12, '75, $2.	7 75	9 00	....	*11 00	5 75	6 50	400
Douglas Mining Co.	Colo.	21,000	1,000,020	10,000	**	.....	....	.....	29 50	29 75	30 00	29 75	....	29 62½	.....
Eureka Cons. G. S. L.	Nevada,	..	5,000,000	50,000	100,000	May 26, '76, $1.	1,000,000	Aug. 5, '75, $1.	....	....	....	....	....	....	.....
Exchequer, G. S.	Nevada,	400	10,000,000	100,000	280,000	Sept. 23, '76, $1.	....	.....	7 00	7 12½	7 00	*8 00	5 25	....	400
Gould and Curry, G. S.	Nevada,	621	10,800,000	108,000	2,018,000	Dec. 11, '76, $1.	3,934,800	Oct. 10, '70, $10.	11 25	....	....	....	11 00	11 00	600
Grant, G. S.	Nevada,	1,000	10,000,000	100,000	....	.....	....	.....	7 25	7 37½	7 37½	....	7 25	7 25	9,700
Granville Gold Co.	N. Car.	9,000	1,000,000	100,000	**	....	....	.....	5 00	4 37½	4 75	4 50	4 75	5 12½	6,800
Hale & Norcross, G. S.	Nevada,	400	11 200,000	112,000	2,247,000	Oct. 10, '76, $1.	1,598,000	April 10, '71, $5.	6 00	....	5 62½	....	5 75	....	1,000
Hukill, S.	Colo.	3,283	1,000,020	10,000	**	.....	20,000	Nov. 1, '76, $1	....	....	....	....	....	....	.....
Indian Queen, S.	Nevada,	1,000	3,000,000	60,000	....	.....	60,000	.....	....	....	....	....	....	....	.....
Julia Cons, G. S.	Nevada,	3,000	11,000,000	110,000	110,000	Sept. 11, '76, $1.	....	.....	5 25	....	5 50	*5 87½	4 75	5 00	950
Justice, G. S.	Nevada,	2,100	10,500,000	105,000	1,502,500	Sept. 14, '76, $5.	....	.....	10 25	....	*14 00	15 62½	13 25	....	650
Kentuck, G. S.	Nevada,	95	3,000,000	30,000	270,000	Dec. 3, '74, $1.	1,252,000	March 8, '70, $5.	....	....	....	....	....	....	.....
Kossuth, G. S.	Nevada,	2,700	5,400,000	108,000c	405,000	Aug. 15, '76, 50c.	....	.....	1 37½	....	....	....	....	....	600
Leopard, G. S.	Nevada,	1,500	5,00 ,000	50,000	50,000	March 31, '76, $1.	162,500	Dec. 15, '76, 50c.	....	....	....	....	4 62½	....	200
Lucerne Mining Co.	Colo.	4,200	5,000,000	500,000	**	.....	....	.....	2 00	2 00	2 12½	1 87½	2 12½	2 25	6,900
Mer. and Min. Tun. Co.	Colo.	30,000	500,000	50,000	**	.. ..	....	.....	....	....	....	....	....	....	.....
Merrimac, S.	Mass.	600	10,000,000	100,800	**	.....	15,000	Dec. 10, '76, $1.	4 00	4 62½	4 87½	4 62½	5 12½	4 87½	8,175
Mexican, G. S.	Nevada,	1,500	500,000	50,000b	100,800	Sept. 5, '76, 50c.	....	.....	18 12½	....	....	18 87½	15 87½	16 50	1,050
Morning Star.	Nevada,	1,600	8,000,000	80,000	....	.....	....	.....	....	....	....	....	....	....	.....
Northern Belle, S.	Nevada,	1,600	5,000,000	50,000	....	.....	950,000	Dec. 15, '76, $1.	26 50	....	27 50	....	25 00	23 75	800
Ophir, G. S.	Nevada,	675	10,080,000	100,800	2,034,400	May 14, '75, $2.	1,394,400	March 9, '64, $4.	21 25	....	....	....	18 50	....	150
Original Comstock, G. S.	Nevada,	....	10,000,000	10,000	....	.....	....	.....	....	*1 00	....	1 00	....	....	100
Overman, G. S.	Nevada,	1,200	3,840,000	38,400b	2,223,280	Oct. 21, '76, $3.	....	.....	....	....	....	*116 50	....	....	....
Pleasant View	Colo.	1,200	200,000	20,000f	**	.....	....	.....	*1 75	....	....	*2 37½	....	*2 00	....
Raymond and Ely, G. S.	Nevada,	5,000	3,000,000	30,000	540,000	Dec. 5, '76, $1.	3,075,000	Sept. 10, '73, $3.	3 37½	3 50	....	*4 50	4 62½	....	900
St. Joseph Lead Co.	Misson.	25.0acs	1,000,000	100,000	....	.....	210,000	.....	....	6 12½	6 00	6 00	6 00	6 25	800
Santiago, G. S.	Nevada,	2,000	11,200,000	112,000	....	.....	....	.....	....	....	....	....	....	....	.....
Savage, G. S.	Nevada,	800	11,200,000	112,000	2,858,000	Nov. 25, '76, $1.	4,460,000	June 11, '69, $3.	....	....	....	....	9 00	9 87½	800
Seg. Belcher, G. S.	Nevada,	160	640,000	6,400	244,800	April 11, '76, $5.	....	.....	....	....	....	....	....	....	.....
Sierra Nevada, G. S.	Nevada,	3,650	10,000,000	100,000	1,500,600	Oct. 24, '76, $1.	102,500	Jan. 16, '71, $1.	....	*11 00	....	*10 00	....	9 00	100
Silver City, G. S.	Nevada,	3,900	6,310,000	63,100	15,775	Nov. 16, '76, 25c.	....	.....	....	....	....	....	....	....	...
Silver Hill, G. S.	Nevada,	5,400	10,800,000	108,000	810,000	Sept. 18, '76, $1.	....	.....	....	....	8 37½	....	....	....	900
South Comstock, G. S.	Nevada,	1,500	10,000,000	100,000	44,000	May 3, '76, 10c.	....	.....	....	....	....	....	....	....	.....
South, California, G. S	Nevada,	1,500	5,000,000	50,000	....	.....	....	.....	....	....	....	....	....	....	.....
Southern Star, G. S.	Nevada,	1,500	6,000,000	600,000	....	.....	....	.....	....	....	....	1 00	....	....	100
Trenton, G. S.	Nevada,	..	10,000,000	100,000	....	.....	....	.....	....	*7 87½	....	*8 00	....	....	.....
Union Cons. G. S.	Nevada,	850	10,000,000	100,000	260,000	March 3, '76, $1.	....	.....	9 75	8 75	10 25	8 50	9 12½	8 75	2,200
West Belcher, G. S.	Nevada,	1,000	10,000,000	100,000	....	.....	....	.....	....	....	....	*2 75	....	....	.....
Yellow Jacket, G. S.	Nevada,	1,200	12,030,000	120,000	2,718,000	Oct. 28, '76, $1.	2,184,000	Aug. 10, '71, $2.50.	16 25	....	17 25	16 00	14 75	14 37½	1,200
Young America, G. S.	Nevada,	1,000	3,000,000	30,000	6,000	Oct. 23, '76, 20c.	....	.....	....	....	....	....	....	....	... ..
		Assessments levied to date, $27,805,537			Div'ds pd. to date.	$85,241,400								Total sales	68,495

BOSTON STOCK MARKET.

									Fri.	Sat.	Mon.	Tues.	Wed.	Thurs.	
Allouez, c.	Mich	..	$1,000,000	20 000c	$940,020	May 9, '76. $5.	....	.....	$5 00	5 00	4 50	5 00	5 00	5 00	.....
Calumet and Hecla, c.	Mich.	¼ mile	2,000,000	80,000d	1,200,000	.....	$11,050,000	Oct. 21, '76, $5.	176 50	179 00	179 50	178 50	179 00	178 50	.....
Central, c.	Mich.	..	500,000	20,000c	100,000	June, '62, 05c.	1,020,000	Feb. 17, '76, $5.	36 00	36 25	36 37½	36 25	36 00	36 00	.....
Copper Falls, c.	Mich.	..	1,000,000	20,000d	535,000	May 10, '76.	100,000	Nov., '71, $1.	3 50	3 62½	3 50	3 50	3 50	3 50	.....
Dana, c	Mich.	..	500,000	20,000d	68,000	Jan., '73, 50c.	....	.....	10	10	10	10	10	10	.....
Dawson, S.	Canada.	..	1,200,000	60,000f	....	.....	....	.....	10	10	10	10	10	10	.....
Duncan, S.	Canada.	..	1,200,000	60,000f	75,000	July, '76, 41⅔.	....	.....	5 37½	5 25	5 50	5 75	6 00	6 62½	.....
Franklin, c	Mich.	..	500,000	20,000d	363,000	June, '68, $5.	585,000	Nov., '71, $1.	14 00	13 87½	14 00	13 87½	13 75	14 00	.....
Humboldt, c.	Mich.	..	500,000	20,000d	100,000	Sept. 28, '76, 15c.	....	.....	18	18	18	19	19	19	.....
International, S.	Canada.	..	1,200,000	60,000f	....	.....	....	.....	62½	62½	62½	62½	68¾	68¾	.....
Madison, c.	Mich.	..	50 ,000	20,000d	123,000	Sept. 11, '74, 10c.	....	.....	37½	37½	37	30	33	35	.....
Mesnard, c	Mich.	..	500,000	20,000d	160,000	April 12, '65, 50c.	....	.....	50	50	50	50	50	50	.....
Minnesota, c	Mich.	..	1,000,000	20,000e	436,000	June 10, '69, $1.	1,820,000	Mch. 15, '76, 50c.	1 87½	1 93¾	2 00	2 00	2 00	2 00	.....
National, c	Mich.	..	500,000	20,000e	195,000	Oct., '75, $1.	360,000	Oct., '73, $1.	1 37½	1 43¾	1 37½	1 37½	1 37½	1 37½	.....
Osceola, c	Mich.	..	1,000,000	40,000d	850 000	May 1, '76, $2.	....	.....	19 50	19 62½	19 75	19 50	19 00	19 00	.....
Petherick, c	Mich.	..	500,000	20,000d	165,533	March 22, '76, 50c.	....	.....	37½	40	40	38	40	40	.....
Pewabic, c	Mich.	..	500,000	20,000d	185,000	June, '68, $3.	460,000	July, '73, $1.	3 25	3 31¼	3 25	3 37½	3 50	3 50	.....
Phenix, c.	Mich.	..	1,000,000	20,000d	817,500	Sept., '70, $3.	....	.....	....	....	....	....	....	....	.....
Quincy, c.	Mich.	..	A 200,000	20,000b	....	.....	2,050,000	Oct. 28, '76, $3.	48 50	48 87½	49 50	49 62½	49 50	49 00	.....
Ridge, c.	Mich.	..	500,000	20,000d	....	.....	....	.....	4 50	4 50	4 50	4 50	4 50	4 50	.....
Rockland, c	Mich.	..	500,000	20,000d	495,000	Jan., '74, $1.	....	.....	27	27	28	30	30	30	.....
Star, c.	Mich.	..	500,000	20,000d	265,000	March 30, '76, 50c.	....	.....	30	30	33	30	32	33	.....
Superior, c.	Mich.	..	500,000	20,000d	340,000	March, '74, 25c.	....	.....	12½	12½	12½	12½	12⅝	12⅝	.....
		Assessments levied to date. $7,440,033			Div'ds paid to date.	$17,445,000							Total sales .. .. —— shares.		

G. Gold. S. Silver. L. Lead. C Copper. a The par value of shares is $100, unless otherwise designated. b Par value $10. c Par value $50. d Par value $25 each. e Par value $15. f Par value $20. g Closing quotations represent the latest prices bid. Prices asked will have a * affixed. h Full paid. i On the four old companies. ** Not Assessable.

Quotations and Sales of Stocks and Bonds,

For the week ending Jan. 11, 1877.

STOCKS.

	Highest	Lowest	Closing	Shr s
Lehigh Valley RR. Co.	48½	48¼	48½	613
Pennsylvania RR.	48⅛	48⅛	48⅛	21,735
Reading RR.	19⅞	18⅜	19⅜	51,274
Lehigh Coal and Nav. Co.	31¼	30½	30¾	9,114
Penn. Canal	—	—	—	—
Buck Mountain Coal Co.	—	—	*25	—
Fulton Coal Co.	—	—	—	—
Locust Mountain Coal Co	—	—	—	—
Westmoreland Coal Co	—	—	*85	—
St. Nicholas Coal Co	—	—	—	—
Cambria Iron Co	—	—	14	—
Crane Iron Co	—	—	*25	—
Emaus Iron Co	—	—	—	—
Pennsylvania Salt Manufact. Co.	—	—	63	—
Total shares sold				82,726
Sales for the week previous				72,993
Increase				9,733

* These quotations are nominal.

BONDS.

	Sales.	Price
H and B. T. RR. 1st mortgage, 7s.	$ ——	—— @107
" " " 2d " "	——	—— @106
" " " 3d " cons	——	—— @ 35
Lehigh Valley RR. Con. mtg. 6s.	22,000	98 @ 98¼
" " " 7s, 1910	1,000	—— @115
" " " 6s Reg.	——	—— @109
" " " 6s coup.	——	—— @110
Pennsylvania RR., 1st mtge. 6s.	4,000	—— @106
" " gen. " cou. 1910	——	—— @106
" " gen. " 6s, reg.	——	—— @106½
" " Cons. M. 6s reg.	3,000	—— @100
Phil. & Reading RR. Con. M. 7s Reg.	5,000	99 @100
" " " 6s, 40-80.	——	—— @103
" " " 7s 1893	4,000	107 @107¾
" " new convertible 7s.	3,000	61 @ 63
" " 6s 1880	——	—— @103½
" " Cons M. 7s coup.	2,000	—— @ 99½
" " debenture 6s.	——	—— @ 60
" " 6s gold coupon.	——	—— @ 95
Phil. & Reading C. & I. Co. Deb. 7s.	——	—— @ 55
" " Heftenstein tract.	——	—— @ 65
Lehigh Coal & Nav. Co., 6s '84.	3,500	—— @104
" " " RR. 6s, '97.	1,000	—— @104½
" " " con. 7s.	——	—— @ 80
" " " 6s gold loan	5,000	59 @ 99½
" " " Conv. gold loan	——	—— @101¼
Penn. Canal, 6s.	——	—— @ 73
Penn. and N. Y. Canal, 7s.	——	—— @109
Ches. and Del. Canal, 6s.	——	—— @ 85
Susquehanna Canal, 6s.	——	—— @ 68
Delaware Division Canal, 6s	——	—— @——
Susquehanna Coal Co. 6s.	——	—— @ 78
Buck. Mount Coal Co. 6s.	——	—— @——
Penn. Gas Coal Co. 6s.	——	—— @——
Honeybrook Coal Co. 7s.	——	—— @——
Total amount of sales	$8c,500	

Closing quotations, in the absence of sales, represent the latest prices bid.

Copper Stocks.

Specially reported by Messrs. WILSON W. FAY & Co., Bankers and Brokers, Room 7 Traveller Building, 31 State Street, Boston.

BOSTON, THURSDAY EVENING, Jan. 11, 1877.

THE market shows a little better feeling to-night, and a little more disposition to trade than some time back. Whether it is for the moment or not, it is impossible to tell at present writing. Calumet has jumped from 176½ to 180, a gain of $3.50 per share, although to-night 178½ is the best bid. Franklin is in demand at 14. International has sold at ¾ freely, and closed at 11-16 bid. There are parties quietly picking up Pewabic at 3¼ to 3¼ per share, although there have been no public sales at those figures. Quincy has advanced from 48¼ to 49¾, and although 48¼ is the best bid to-night, the stock could not probably be purchased under 49¾. Duncan silver has been more active, selling from 5⅜ to 6¾, and closing at 6⅝ to 6⅞.

Gold and Silver Stocks.

AMERICAN MINING AND STOCK EXCHANGE,

NEW YORK, FRIDAY EVENING, Jan. 12, 1877.

Our table of quotations gives the full course of the mining share market here during the past week, the reported sales for the week amount to some 70,000 shares. We give below from our latest exchanges, information regarding the condition of some of the prominent mines,

Consolidated Virginia.—Daily yield, 275 tons of ore, which is being crushed as fast as it is extracted. The greater portion of this ore is being hoisted through the Ophir shaft, as the use of the Consolidated shaft is nearly taken up with the hoisting of ore for the California. Nothing whatever is being done in the way of prospecting on the 1550-feet level, so that above that point in the mine there are no changes to note of any of the ore producing sections. The north winze has been put in good repair, and a d ift started south at the 1650-feet level. This drift will be run to a point opposite where the west drift from the C. and C. shaft will strike the ledge, when a crosscut will then be run to meet and connect with that drift. The face of this drift, from the time it was started, until to-day, has been in ore which will mill from $100 to $130 per ton. What the width of the ore is at this point cannot of course yet be determined, but all doubts as to the ore extending downward is set at rest by the opening of this station. The enlargement of the connecting drifts with the Best and Belcher and Gould and Curry mines is being pushed ahead with all the vigor possible. The west drift from the C. and C. shaft is making fair progress, notwithstanding the very hard and unfavorable ground encountered.

California.—Daily yield 550 tons of ore. The ore stopes and breasts in every portion of the mine are showing richly, and promise a long and prosperous yield. The south drift on the 1600-feet level is still advancing, the face in rich ore. The south drift on the 1650-feet level, from north winze, shows the ore at that point to be as rich as any that has been found on the levels above. This is within a very short distance of the south line, and begins to look as if the opening up of as rich bodies of ore as any that have yet been found in the mine was almost an assured fact. The west drift from the 1650-feet station of the C. & C. shaft is making steady headway, notwithstanding the trouble experienced with streaks of very soft giving ground intermixed with strata of the hardest possible description. The pump-bob below the 1650-feet station in the shaft has been finished, and the sinking resumed. The flow of water at the bottom is still fearfully strong, averaging about 45 inches, miners' measurement. The mills are kept steadily running.

Overman.—A strong flow of water was encountered day before yesterday in the drift on the 1400-feet level, which has obliged a suspension of the work at that point until the large pumps can be put fairly to wo k. This is being consummated as rapidly as it is possible for such work to be done. In the meantime the main drift has been started up at the 1300-feet level to drain the water at that point, and thus gradually decrease the great strength of the head. This water is being permitted to run into the shaft, and is being bailed out with the water tanks so as to hold it below the 1300-feet station until the large pumps can be set at work. As soon as the water can be drained off winzes can be started downward on the ore from the 1200-feet level. The south drift, on the 1200-feet level running to connect with the Caledonia north drift, is making the best of headway.

Best and Belcher.—Crosscutting and driving the diamond drills on the 1700-fet level are making fair progress. So far there is nothing of interest in the shape of ore developments, although the work which is now being prosecuted may find something valuable at any moment.

Hale & Norcross.—The pumps are running steadily, and were gaining upon the water un il the past three days, when a stoppage of the Savage pumping engine for repairs caused a rise in the water to a point 21 feet above the 1900 feet station, at which point it is now held with the Norcross pumps alone. The heavy head of water is entirely gone, and as soon as the two pumps can again be set at work, the flow will be overcome very rapidly.

The annual meeting of the Consolidated Virginia Mining Company was held in San Francisco yesterday, the 11th inst. Messrs. Mackey, Flood, O'Brien, and Judge Heydenfeldt were present in behalf of the management, and S. P. Dewey represented the malcontents. The office was crowded, and much interest was manifested.

Mr. Dewey attacked Mr. Flood sharply, accusing him of withholding information as to the condition and prospects of the mine, and the probability of passing the January dividend, when a candid explanation a few weeks ago would have saved the public millions of dollars.

Messrs. Mackey, Flood and Heydenfeldt defended the management, claiming that it was impossible to anticipate developments; that two or three days or a week could not promise anything for the future to a certainty, and that the management had done their best.

The discussion during the afternoon was very hot, charges of falsehood being exchanged by Messrs. Flood and Dewey, and the meeting adjourned amid considerable confusion.

Julia.—The ore and quartz in the face of the west crosscut from the main south drift on the 1800-feet level continue to improve in both looks and quality daily. The assays are not very large, ranging from $10 to $30, but the character of the quartz and ledge is such that there is not a doubt but a concentration of the ore vein has been encountered, which may open into a veritable bonanza at almost any day.

Belcher.—Daily yield, 75 tons of ore, keeping the Eureka mill steadily running. The ore breasts are gradually giving out on the old levels, so that much more of an effort is required to keep up the supply of milling ore than formerly.

Chollar-Potosi.—Daily yield, 100 tons of ore, the assay value of which is $30 per ton. A contract has been let, and some fair ore is being extracted from the croppings in the old upper workings near the surface.—*Gold Hill News*, Jan. 3, 1877.

The old board was re-elected, the opposition ticket receiving 32,335 votes.

A resolution was adopted, providing that hereafter a monthly statement of the receipts and expenditures be placed on file in the office for the benefit of the stockholders.

A proposition was made that the company purchase the Pacific Mill, owned by Flood & O'Brien, and used for crushing Consolidated Virginia ore, but was voted down.

The Secretary submitted his report, which shows that the receipts for the year, including the balance outstanding from the last report, were $17,470 106,80. The principal items were the gross product of the mine, $16,646,177.71. (this is a decrease of about $100,000 as compared with the product for 1875) and overdrafts in the Nevada Bank, $569,055. The Managers had previously stated that much of these overdrafts were to save the ruinous discount on silver. The disbursements include bullion to balance unsold in bank, $568,636; dividends, from the 22d to the 32d, inclusive, $11,880,000; reduction of ore, $1,806,285; bullion discount, $1,342,000; salaries, $486,500; ore purchase, $453,000; supplies, $238,650; taxes, $236,000; C. and C. shaft, $208,000; assaying, legal expenses, etc., accounting for the balance.

The market value of the stock of this mine on the 1st of January, 1876, amounted to $43,524,000, equal to 180.60 per share. The market value on December 30, 1876, was $23,544,000, equal to $37 per share. Shrinkage of stock during the year, $23,544,000, equal to $43.60 per share. Eleven dividends paid during the year of $2 each, equal $11 880,000 or $24 per share. This shows a total loss on this stock for the year of nearly $11,000,000, equal to about $20 per share exclusive of interest.

Gas Stocks.

NEW YORK, FRIDAY EVENING, Jan. 12, 1877.

The market for gas stocks is very quiet and without special feature. We change a few of the quotations, principally to lower figures.

The New Bedford, Mass., Gas Co., has declared a dividend of 5 per cent.

Manhattan Gas Co.—We note a recent auction sale of 45 shares of this stock, at from $239 to $240 per share.

New York Gas Co.—We note a recent auction sale of 72 shares of this stock, at $131 per share.

Washington, D. C., Gas Co.—We note a recent auction sale of 10 shares of the scrip stock of this Company, at $20 per share.

San Francisco Gas Co.—We note recent transactions of this stock aggregating about 1,200 shares, at from $109¼ to $111 per share.

Rochester, N. Y.—The gas consumers at this place are beginning to complain of the size of their bills.

Peekskill, N. Y.—The gas at this place has recently been reduced from $4.00 to $3 50 per 1,000 feet.

Brooklyn, N. Y.—The gas companies have offered to supply this city with gas for the current year at $2.25 per 1,000 feet.

Camden, N. J., Gas Works.—The expiration of the charterial privileges of the Camden Gas-light Company, and the notice that the said company will apply to the Legislature for the passage of an act extending their franchises and authority for twenty years longer, have given occasion for City Council to propose purchasing the works. A committee has been appointed to superintend the matter, and watch the progress of the bill to extend during its pass ge through the Legislature. The object of the committee is to prevent any special or monopoly privileges being given to the company again, in case the city does not purchase. It is claimed that the company now have exclusive right to occupy and lay pipes in any and all the streets of the city, and no one, not even the city itself, has the privilege of crossing the pipes without consent, thus making it inconvenient at times to make necessary improvements and introduce water pipes. These are the franchises which Council desire to have expunged from the future charter of the company.

The St. Louis Gas Difficulty.—The Commissioners appointed by the Circuit Court last June to apprise the property of the St. Louis Gas-light Company, with a view to ascertain what, if anything, was due from the city to the gas company, or from the gas company to the city last June, under the decision of Judge Gottscarlk that the city had owned the gas works since January, 1870, filed their report with the Clerk of the Circuit Court on the 1st inst. It is a very lengthy and elaborate document, and shows, after giving the detailed appraisement of the property, the receipts and expenditures and profits of the company, from January 1, 1870, to June 1876, that the company owes the city in round numbers $750,000.

Egan, Ill., Gas Difficulty.—There are strong indications of a gas war at this place. Some time ago the City Council discovered that the charter of the Elgin Gas Company stipulated that it should furnish gas as cheap as any other company located twenty-five miles from a coal field. Chicago excepted. The Council passed an order to the effect that all consumers of gas, using 1,000 feet or over, should have it at $3 per 1,000, provided it was paid for during the first three working days of the month. The gas company insists upon $3.50 per 1,000, and private consumers are compelled to pay that sum, while the city refuses to do so, and has so far compelled the gas company to accept from it pay at the rate of $3 per 1,000, with the usual discount of 20 per cent. Private consumers feel that they have some rights in the matter. An effort was made on the 9th inst. in the Council to bring the gas company to terms

New York Gas Legislation.—A bill will be introduced in the N. Y. House of Representatives to-day for the regulation of gas companies. It is made to apply to the whole State. It requires that gas companies shall report annually to the State Controller as follows: The amount of capital stock, incomes and profits from all sources; dividends, shares, and extra shares of stock issued; certificates of indebtedness; investments of any kind made in behalf of such companies; also all and any assets not above, numerated; the amount disbursed for improvements to machinery and works, sums expended for taxation upon income, and all expenditures of any kind whatever. The report must be sworn to by the President, Treasurer, and Secretary. The State Controller is empowered to reject any report which he may deem not sufficiently explicit, and require the company to file an amended report. Failure to comply with the provisions of the law is made a misdemeanor, punishable by fine and imprisonment, the prosecution of the delinquent officers to be conducted by the Attorney-General.

Lighting the Annexed Districts of the City.—At the meeting of the Board of Aldermen on the 11th inst., the Commissioners of Public Works sent in the following statement as to gas furnished for the annexed districts:

Gas is furnished in the Twenty-third ward by the Central Gas-light Company, and in the Twenty-fourth ward by the Suburban Gas-light Company. The prices paid for lighting each street lamp are: To the Central Gas-light Company, $45 per annum; to the Suburban Gas-light Company, $50 per annum. The authority or agreement under which these lamps are lighted are contracts made prior to the annexation, between the authorities of the respective towns and gas companies. The contracts were made in January, 1871, and run for ten years from that date.

Boston Gas Co.—Quotations of this stock, during the week, have ranged between $800 and $810 per share.

The following list of Companies in New York and vicinity are corrected weekly by GEORGE H PRENTISS, Broker and Dealer in Gas Stocks, No. 30 Broad st., N. Y.

Companies in New York and Vicinity	Cap. Stk.	Par.	last Div.	When Paid.	Bid.	Askd.
			pr.c			
Mutual, N. Y.....	$5,000,000	$ 100	2½	Jan- '77	94	96
" " Bonds	90,000	1,000	†3½	Aug. '76	109	
NewYork, "	4,000,000		5	Nov. '76	136	138
Metropol. "	2,500,000	100	5	Sep. '76	147	—
" " Certf.	1,000,000	....	3½	" "	102½	104½
" " Bonds	500,000	1,000	3½	Dec. "		102½
Harlem "	1.850,000	50	4	Aug. '76	106	—
Manhattan"	4,000,000	50	10	Dec. "	235	238
Brooklyn, B'klyn..	2,000,000	25	5	Nov. '76	175	180
Nassau "	1,000,000	25	4	Jan. '76	80	—
" " Certf.	700,000	1,000	3½	Nov. '76	95	—
People's "	1,000,000	10	3½	Jan. '76	50	55
" " Certf.	300,000	1,000	3½	July '76	84	90
" " Bds	325,000	....	3½	Aug. "	90	66
Metropol. "	1,000,000	10	3½	Nov. '76	76	80
Wmsburgh "	1,000,000	50	5	Oct. '76	130	—
" " Certf.	1,000,000	....	3½	July "	100	102½
Citizen's " ...	1,200,000	20	2½	Jan. '76	96	100
" " Certf.	320,000	1,000	3½	Oct. "	98	102
J. C. N.J.....	750,000	20	5	July,'75	160	—
Centl. Westch. N.Y.	466,000	50	4	July, "	90	—
Subur'n " "	390,000	50				90

† Gold.

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